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UNITED STATES TARIFF COMMISSION
Washington

S U G A R

REPORT

of the

UNITED STATES TARIFF COMMISSION

to the

PRESIDENT OF THE UNITED STATES

SECTION I. FINDINGS

Under the Provisions
of Sections 332 and 336
of the
Tariff Act of 1930

This report of the United States Tariff Commission on sugar upon which the historic proclamation of May 8, 1934, reducing the rate of duty on sugar was based, should have been placed in the files of the White House, along with the proclamation.

However, since it was sent to the Department of Agriculture in connection with our sugar program and the formulation of the Jones-Costigan sugar program, we are keeping it in our file. Ultimately, it should be sent to the Archives when the Sugar Branch is liquidated.

JBernhardt/la
June, 1943

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UNITED STATES TARIFF COMMISSION
Washington

January 22, 1934.

SUGAR

Report to the President

To the President:

The Tariff Commission herein reports the results of an investigation of the difference in costs of production of sugar in the United States and in the principal competing country, as a possible basis for changing the rates of duty thereon for the purposes of section 336 of Title III of the Tariff Act of 1930. It also reports the result of a more general investigation, conducted under the authority of section 332 of that act, concerning the supply and demand of sugar for the American market, prices, costs of production in insular areas, and other pertinent matters.

JUN 22 1934

SUMMARY OF FINDINGS

I. Under section 336 of Title III of the Tariff Act of 1930

A. Raw sugar. - On the basis of a comparison of the costs of production of cane and beet sugar in continental United States and of cane sugar in Hawaii with the costs of production of cane sugar in Cuba, the principal competing country, for the three-year period 1929-30 to 1931-32, the Commission finds that the equalization of costs would require a reduction of 25 per centum in the present rates of duty on Cuban sugar. This would reduce the rate on Cuban sugar testing not over 75 degrees from 1.37 to 1.0275 cents per pound and the differential for each additional sugar degree from 0.03 to 0.0225 cent per pound. The rate on 96 degree sugar from Cuba would thus be reduced from 2.0 to 1.5 cents per pound.

B. Refined sugar. - The Commission further finds that the costs ascertained for refined cane sugar produced in the United States and in Cuba for the 3-year period 1929, 1930, and 1931 do not warrant any change in the relationship of the duty on refined (100 degree) sugar to the duty on raw sugar prescribed in the Act of 1930, and that consequently any reduction in the duty on raw sugar should be accompanied by the same percentage reduction in the rate on refined sugar. The rate on 100 degree sugar imported from Cuba would, therefore, under this finding, be reduced from 2.12 to 1.59 cents per pound.

C. General or world rates of duty. - Since section 336 requires that rates of duty modified thereunder be based on a comparison of costs in the United States and the principal competing country and the rate proclaimed must apply to imports from foreign countries generally, and since United States imports of Cuban sugar are entitled (under the Cuban Convention of 1902) to a reduction of 20 per centum from the general rates on sugar, the change indicated above could not be made to apply to Cuban sugar alone, and if the rates of duty on Cuban sugar were changed by proclamation under the provisions of section 336 of the Tariff Act of 1930, it would be necessary to change the world rates as well as the Cuban rates; the general rates proclaimed would be 25 per centum higher than those specified above on Cuban sugar.

II. Under section 332 of Title III of the Tariff Act of 1930

A. General survey. - In connection with its investigation regarding the difference between domestic and Cuban costs as ascertained for the purpose of section 336, the Commission conducted a general investigation under section 332, and the report calls attention to certain facts ascertained therein which have a major bearing on public policy with respect to sugar. These include a comparison of the costs of production of raw sugar in Puerto Rico and the Philippines with costs in Cuba, together with an analysis of data concerning the supply and demand for sugar, the trend of prices and other pertinent factors.

B. General conclusions.- Stated briefly the general conclusions from this broader survey are:

(1) That the cost period is not representative, and that no recent period could be regarded as representative, of normal conditions for the ascertainment of costs because of the rapid tendency of costs and prices to travel up and down together although at different rates in different areas, the tendency resulting in a greater depression of costs below the normal in Cuba than in the United States.

(2) That the cost of production alone may be regarded as a questionable basis for changes in the rates of duty for the reason that costs have been and will continue to be adjusted to the duty.

(3) That while the relationship between the rates on raw and refined sugar was approximately equitable while the refining operations were carried on in separate independent refineries in continental United States, the insular areas, and in Cuba as well as in general in other foreign countries, the situation may be changed as a result of a recent trend, - particularly since 1930 in Cuba, - to add refining operations to the raw sugar mills in producing areas. The older small local raw sugar mills had largely given way to large "centrals" during the preceding period and this was doubtless among the causes that have led to the further trend noted, - i.e., the addition in Cuba of the finishing or refining process. Another and potent cause was the difference in the price of raw sugar to Cuban plants for refining and the price increased by the duty on raw sugar to American refiners. Sufficient data are not yet available and cost studies of the newer developments have not yet been made which would be necessary to establish a basis for a

conclusion as to future requirements to protect continental refiners from this new form of competition, particularly if the price of raw sugar is lower to them.

(4) That a change in duty rates alone would not settle the chaotic condition in the sugar industry since the supply of sugar available for the American market is so great and the competition to supply the American market is so keen as to depress the market price far below costs. Thus, while the three-year average cost of producing 96° raw sugar in Cuba, plus transportation to Atlantic and Gulf seaboard refineries, was 1.923 cents per pound, the average c. & f. price at New York was only 0.925 cent per pound in 1932, and 1.208 cents per pound in 1933;

(5) That the most effective way, based on the information ascertained by investigations of the Commission, to improve the situation both in Cuba and in the United States is to lower the Cuban duty, and at the same time adjust to market demand deliveries of sugar not only from Cuba but from all other areas contributing to the American supply. If this were done, then the cost differences ascertained in this investigation might be accepted as the most satisfactory guide attainable; but in that case the costs in Puerto Rico and the Philippines should be taken into account as well as those in continental United States and Hawaii in determining domestic costs for purposes of comparison with Cuban costs. For that reason comparisons are made in the attached report both including costs secured for Puerto Rico and the Philippines with those for continental United States and Hawaii, and excluding them.

FINDINGS OF THE COMMISSION

I. Under section 336 of Title III of the Tariff Act of 1930

A. Raw sugar

1. Duties on sugar. - The Tariff Act of 1930, like previous tariff acts, provides a specified rate of duty on sugar testing not over 75 degrees by the polariscope, together with a differential to be added to this basic rate for each higher degree of sugar up to 100 degrees. The most important grade of sugar imported into the United States is 96 degree. Under the Tariff Act of 1909 the general rate on 96 degree sugar was 1.685 cents per pound; under the act of 1913, 1.256 cents; under the Emergency Act of 1921, 2.0 cents; under the act of 1922, 2.206 cents; and under the act of 1930, 2.5 cents. From all these rates Cuban sugar under the Reciprocity Convention of 1902 has had a preferential reduction of 20 per centum, the rates on Cuban 96 degree sugar thus being under the several acts above mentioned 1.348, 1.0048, 1.60, 1.7648, and 2.0 respectively. Since during recent years nearly all imported sugar has come from Cuba, it is with the Cuban duty that this report is chiefly concerned.

In addition to the changes in specific rates of duty the relation of the rate of duty on sugar to its value - that is, the ad valorem equivalent of the duty - has varied greatly because of wide fluctuations in the price of sugar. The rate of 1.7648 cents on Cuban sugar of 96 degree test under the act of 1922 was equal to 37 percent on the basis of the average foreign value of Cuban sugar imported in 1923, but with the subsequent decline in the price of sugar it was equal to 94 percent on the basis of the foreign value of the sugar imported in 1929. The duty of 2 cents on 96 degree sugar under the act of 1930 was equal to 152 percent ad valorem on the average during 1931, to 193 percent during 1932, to 189 percent during the first half of 1933, and to 192.2 percent during January-October, 1933.

2. Consumption of sugar. - Except during temporary periods when special causal conditions prevailed, such as those resulting from the World War, and the present depression, the consumption of sugar in the United States has increased faster than the population. The annual average consumption (in terms of refined sugar) in continental United States from 1897 to 1900 was about 2,400,000 tons 1/ and from 1927 to 1930 about 6,200,000 tons, these figures being equal to about 64 and 103 pounds per capita, respectively. There has been some decline in consumption during the depression; in 1932 it amounted to about 5,840,000 tons, or 94 pounds per capita.

3. Sources of sugar supply. - The consumption of sugar in continental United States is supplied almost entirely from three major sources: (a) domestic production (i.e., in continental United States itself); (b) shipments from the insular areas of the United States, principally Hawaii, Puerto Rico, and the Philippine Islands, from all of which sugar is brought in free of duty; and (c) imports from Cuba at a duty 20 percent below the general rate prescribed by statute. Except during 1920, there has been little importation from other foreign countries for more than 20 years. Of the domestic sugar the great bulk has for many years consisted of beet sugar which is produced chiefly in the Western States, with a limited output in certain North Central States. The remainder of the domestic production is cane sugar, produced chiefly in Louisiana, which in no year since 1923 has represented as much as 4 percent of the total consumption. In the last few

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1/ In this report the short ton of 2,000 pounds is used unless otherwise noted.

years Hawaii, Puerto Rico, and the Philippine Islands have been not far from equal to each other in importance as sources of supply of sugar to continental United States.

The relative importance of the three major sources of supply above specified remained roughly unchanged from about 1910 to about 1925. Since that time the share supplied by Cuba has fallen greatly and the share furnished by the insular areas has risen greatly. The proportion furnished by production in continental United States averaged about 23.5 percent of the total from 1912 to 1921 but declined to about 18.5 percent for the period 1927-30 and again increased to slightly above 23.5 percent for 1931-32.

Of the total quantity of domestic sugar consumed in 1932, 1,232,000 tons was beet sugar and 150,000 tons chiefly Louisiana cane sugar. Of the total quantity supplied by the Insular Areas in that year, 957,000 tons was from Hawaii, 851,000 tons from Puerto Rico, and 974,000 tons from the Philippine Islands.

The following table shows the quantities and proportions supplied by the several sources during those periods and years which are most significant.

Table 1. - Sources of sugar consumed in continental United States

(Short tons)

Period or year	Total consumption 1/	Consumption supplied by			Proportion supplied by-		
		Cont. U.S. beet and cane	Insular areas	Cuba	Cont. United States	Insular areas	Cuba
					Percent	Percent	Percent
Average -							
1912-1913 --	4,058,000	900,000	1,022,000	2,047,000	22.2	25.2	50.4
1914-1916 --	4,190,000	1,004,000	1,073,000	2,063,000	24.0	25.6	49.2
1917-1921 --	4,354,000	1,025,000	1,039,000	2,117,000	23.5	23.9	48.6
1922-1926 --	5,804,000	1,130,000	1,336,000	3,262,000	19.4	23.0	56.2
1927-1930 --	6,230,000	1,148,000	1,981,000	3,078,000	18.4	31.8	49.4
1931 -------	6,132,000	1,447,000	2,366,000	2,281,000	23.6	38.6	37.2
1932 -------	5,840,000	1,382,000	2,786,000	1,647,000	23.7	47.7	28.2

1/ Including small quantities from foreign countries other than Cuba.

4. Representative period. - The three growing and processing years 1929-1930, 1930-1931, and 1931-1932 are the most representative period as regards costs of production which could be selected and constitute a representative period for the purposes of section 336.

5. Principal competing country. - Cuba is the principal competing country.

6. Basis of cost comparison. - For the purpose of determining the rates of duty in accordance with section 336, a comparison of sugar costs must be made between Cuba on the one hand and continental United States and Hawaii on the other hand. Under the law the costs in the Philippine Islands and in Puerto Rico cannot be taken into consideration in fixing the duty in accordance with that section.

7. Method of cost comparison. - The sugar mills of Louisiana and Hawaii produce raw cane sugar, which is subsequently refined, for the most part in separate plants, and costs of this raw sugar can and should be compared directly with the costs of Cuban raw sugar. On the other hand, beet sugar factories in the United States do not produce raw sugar as such, but by a continuous process extract refined sugar from the sugar beets. The domestic beet sugar industry, however, is directly affected not merely by the duty on imported refined sugar but also by the duty on imported raw sugar. Domestic beet sugar must compete with sugar brought from Cuba in the raw state and refined in the United States itself, as well as with sugar refined in Cuba. It is essential, therefore, in connection with the determination of the proper duty on raw sugar that, in addition to comparison between costs of raw cane sugar in Louisiana and Hawaii and the Cuban cost of raw sugar, there should be a comparison between the cost

of domestic beet sugar, a refined product, and the cost of Cuban raw sugar plus the cost of converting it into refined sugar.

8. Comparability. - Raw cane sugar of a given polariscopic test produced in Cuba is like or similar to raw cane sugar of the same test produced in continental United States and in Hawaii. The average test of the raw sugar produced in continental United States, Hawaii, and Cuba is approximately the same, ranging generally from about 95 to 97 degrees. In order to make more precise comparison the costs of raw cane sugar produced in all the areas have been computed on the basis of 96 degrees. Cane sugar refined in the United States and in Cuba from Cuban raw sugar is like or similar to beet sugar produced in the United States. The cost difference with respect to 96 degree raw sugar is, as a percentage, representative of the cost difference with respect to raw sugar (defined in the Tariff Act as sugars, tank bottoms, sirups of cane juice, melada, concentrated melada, concrete and concentrated molasses) of all other degrees of polariscopic test, and with respect to mixtures containing sugar and water testing by the polariscope above 50 sugar degrees and not above 75 sugar degrees. That is to say, any change in the rate of duty on 96 degree sugar, resulting from the comparison of costs, should be accompanied by a change of the same percentage in the differential rate per degree of sugar test.

9. Principal markets for raw cane sugar. - Practically all raw cane sugar is subjected to the refining process and the markets for it are the points where refineries are situated. The principal such markets in continental United States are New York, Philadelphia, Boston, Baltimore, Savannah, and New Orleans for Cuban raw sugar; the New Orleans area for raw cane sugar produced in Louisiana; and San Francisco and New York for raw cane sugar produced in Hawaii.

10. Principal markets for beet sugar and sugar refined from Cuban raw sugar. - Domestic beet sugar is marketed throughout the United States except that in the area east of the Alleghany Mountains and certain parts of the South the amount is quite small. The cost of transportation to all markets supplied by beet sugar was ascertained for each of the beet sugar factories included in the cost investigation, and a weighted average transportation cost was computed therefrom. Sugar refined from Cuban raw sugar is marketed almost entirely in the region east of the line of the Missouri River. Representative cities were selected in each State of this area and the cost of transportation thereto of sugar refined from Cuban raw sugar, from refineries both in the United States and in Cuba, was ascertained, as well as the cost of transportation of the raw sugar to the refineries. The general average cost of transportation from the refineries to this region has been computed by weighting the transportation cost to the representative cities by the total shipments of sugar refined from Cuban raw sugar into the States in which they are situated.

11. Costs of raw cane sugar ascertained in accordance with section 336:

A. The average cost of production of raw cane sugar, including the cost of production of sugar cane, the transportation thereof to the sugar mill, and the conversion cost to raw sugar, in Louisiana during the representative period of three years was 4.513 cents per pound and in Hawaii, 2.974 cents per pound. The corresponding cost in Cuba, the principal competing country, was 1.676 cents per pound.

B. The average cost of transportation and other delivery charges to the respective principal markets in the United States from the

centers of production during the representative period for raw cane sugar produced in Louisiana, was 0.133 cent per pound; for that produced in Hawaii, 0.312 cent, and for that produced in Cuba, 0.247 cent per pound.

C. No other relevant factors constituting an advantage or disadvantage in competition were disclosed in the course of the investigation for the purposes of section 336. In this connection, however, attention is called to the general factors affecting the sugar industry disclosed in the course of the Commission's study under section 332 of the Tariff Act of 1930 and set forth in that section of this report.

The total cost of production of raw cane sugar, including transportation and other delivery charges to the principal markets, was thus 4.646 cents per pound for sugar produced in Louisiana, 3.286 cents for that produced in Hawaii, and 1.943 cents per pound for that produced in Cuba. The excess of the domestic over the Cuban cost was thus 2.723 cents per pound for sugar produced in Louisiana and 1.363 cents per pound for sugar produced in Hawaii.

II. Costs of beet sugar and of sugar refined from Cuban raw sugar ascertained in accordance with section 336:

A. The average domestic cost of production of beet sugar (including the cost of production of sugar beets, their transportation to the factory, and the cost of converting them into refined beet sugar) during the representative period was 3.928 cents per pound. The average cost of production of refined sugar produced from Cuban raw sugar as of Atlantic and Gulf ports of the United States (including the cost of producing sugar cane in Cuba, the cost of transporting it to the crushing mill, the cost of converting it into raw sugar, the cost of transportation and other delivery charges

on such raw sugar to refining points in the United States or in Cuba, the cost of converting it into refined sugar at those points and the cost of transportation to United States Atlantic and Gulf ports of that part of the sugar which was refined in Cuba) during the representative period was 2.653 cents per pound.

B. The average cost of transportation and other delivery charges on beet sugar to markets in the United States during the representative period was 0.496 cent per pound, and the corresponding cost for refined sugar produced from Cuban raw sugar, from Atlantic and Gulf ports of the United States to markets in the United States, was 0.265 cent per pound during the same period.

C. No other relevant factors constituting an advantage or disadvantage in competition were disclosed in the course of the investigation for the purposes of section 336. In this connection, however, attention is called to the general factors affecting the sugar industry disclosed in the course of the Commission's study under section 332 of the Tariff Act of 1930 and set forth in that section of this report.

The total cost of production and of transportation and other delivery charges to the principal market region was thus 4.424 cents per pound for domestic beet sugar and 2.918 cents per pound for refined sugar produced from Cuban raw sugar, the excess of domestic over foreign costs thus being 1.506 cents per pound of refined sugar; this is equal to 1.407 cents per pound of raw sugar, 107 pounds of raw sugar being required to produce 100 pounds of refined sugar.

13. Combined average excess of domestic costs. - The three figures of the excess of domestic over foreign costs shown in paragraphs 11 and 12, namely

2.723 cents per pound for Louisiana sugar, 1.363 cents for Hawaiian sugar, and 1.407 cents (raw basis) for beet sugar, taken together, give a weighted average excess of domestic over Cuban costs amounting to 1.495 cents per pound of raw sugar.

It may be noted that the average excess of domestic over foreign cost for each of the three years covered by the investigation was not widely different from the average shown for the 3-year period as a whole.

14. Adjustment of duty to polariscopic test of sugar. - On the basis of the average cost difference ascertained by the investigation the Commission finds that the duty necessary to equalize domestic costs with Cuban costs of 96 degree raw sugar is 1.50 cents per pound. In order that the corresponding percentage reduction in rate should be made on raw sugar of all other degrees of polarization, the present differential of 0.030 cent per degree (on Cuban sugar) should be reduced by the same percentage (25 percent) as the rate on 96 degree sugar, or to 0.0225 cent per degree. The reduced rate on Cuban sugar not exceeding 75 degree test thus becomes 1.0275 cents per pound.

As shown under "B" below the Commission finds that the results of the investigation of the difference in costs between refined sugar produced in the United States and that produced in Cuba, during the cost period covered, do not warrant any change in the relationship of the duty on 100 degree (refined) sugar to the duty on raw sugar, and that, therefore, if a reduction is made in the rate of duty on Cuban 96 degree raw sugar, the same percentage reduction should also be made in the duty on refined sugar;

accordingly the reduced differential specified in this paragraph would be continued up to and including 100 degree sugar, making the rate thereon, applicable to imports from Cuba, 1.59 cents per pound.

15. Effect of Reciprocity Convention with Cuba. - Since imports of sugar from Cuba, the principal competing country with respect both to raw sugar and refined sugar, are entitled to a reduction of 20 percent from the general rates, the rates to be proclaimed, if a change in duty were proclaimed on the basis of this study under section 336, must exceed the rates found on the basis of the actual cost differences between Cuban and domestic sugar, as specified in paragraph 14, by 25 percent.

The following table shows the present rates of duty on each sugar degree for Cuban sugar, together with the rates resulting from a basic rate of 1.50 cents per pound on 96 degree sugar and a differential of 0.0225 cent for each degree. Corresponding rates on full duty sugar are also shown.

Table 2. - Present rates of duty on sugar and rates adjusted to the cost difference found in this investigation for raw sugar

(Cents per pound)

	Full-duty sugar		Cuban sugar at reduction of 20 percent	
	Present rate	Rate as found	Present rate	Rate as found
Rate on 96 degree sugar (basis of cost comparison)	2.5000	1.875	2.0000	1/ 1.50
Differential for each degree	.0375	.028125	.0300	.0225
Rate on sugar of -				
Not over 75 degrees	1.7125	1.284375	1.3700	1.0275
76 "	1.7500	1.312500	1.4000	1.0500
77 "	1.7875	1.340625	1.4300	1.0725
78 "	1.8250	1.368750	1.4600	1.0950
79 "	1.8625	1.396875	1.4900	1.1175
80 "	1.9000	1.425000	1.5200	1.1400
81 "	1.9375	1.453125	1.5500	1.1625
82 "	1.9750	1.481250	1.5800	1.1850
83 "	2.0125	1.509375	1.6100	1.2075
84 "	2.0500	1.537500	1.6400	1.2300
85 "	2.0875	1.565625	1.6700	1.2525
86 "	2.1250	1.593750	1.7000	1.2750
87 "	2.1625	1.621875	1.7300	1.2975
88 "	2.2000	1.650000	1.7600	1.3200
89 "	2.2375	1.678125	1.7900	1.3425
90 "	2.2750	1.706250	1.8200	1.3650
91 "	2.3125	1.734375	1.8500	1.3875
92 "	2.3500	1.762500	1.8800	1.4100
93 "	2.3875	1.790625	1.9100	1.4325
94 "	2.4250	1.818750	1.9400	1.4550
95 "	2.4625	1.846875	1.9700	1.4775
96 "	2.5000	1.875000	2.0000	1.5000
97 "	2.5375	1.903125	2.0300	1.5225
98 "	2.5750	1.931250	2.0600	1.5450
99 "	2.6125	1.959375	2.0900	1.5675
100 "	2.6500	1.987500	2.1200	1.5900

1/ Cost difference on Cuban sugar was 1.495; 1.500 is here used.

B. Refined sugar

1. Refined differential. - There is no precise and generally accepted definition of refined sugar, and refined sugar is not expressly mentioned in the tariff act. For the purposes of cost comparison under section 336, refined sugar has been taken as sugar of 100 degrees polariscopic test, since most refined sugar is either of 100 degree test or very nearly that test (99 degrees and a fraction), and all 100 degree sugar is refined sugar.

The significance of the duty on 100 degree sugar depends upon the relation of that duty to the duty on raw sugar. Under the Tariff Act of 1930, as was also true under the acts of 1922, 1921, and 1913, the rate of duty on 100 degree sugar is not stated expressly in the law but is determined by the differential applicable to each succeeding degree of test of sugar above the base of 75 degrees. Under the act of 1930 the rate of duty on 96 degree raw sugar imported from Cuba (which enjoys a 20 percent preference below the general rate) is 2.00 cents per pound and the differential per degree is 0.003 cent per pound (on Cuban sugar), so that the duty on 100 degree sugar is 2.12 cents per pound. It requires 1.07 pounds (within a very small decimal) of 96 degree sugar to produce 1 pound of refined sugar. The relation between the duty on that quantity of raw sugar and the duty on refined sugar under recent tariff acts appears from the statement below. This statement shows that under the acts of 1913, 1921, and 1922 the duty on 1 pound of 100 degree sugar was somewhat greater than the duty on 1.07 pounds of 96 degree sugar, whereas under the act of 1930 it was 0.02 cent below the duty on that quantity of raw sugar.

Rates of duty on Cuban sugar

	Act of 1913	Act of 1921	Act of 1922	Act of 1930
Rate on 96 degree sugar, cents per pound	1.0048	1.600	1.7648	2.000
Equivalent for 1.07 pounds, cents	1.0751	1.712	1.8883	2.140
Rate on 100 degree sugar, cents per pound	1.0880	1.728	1.9120	2.120
Difference between -				
96 degree and 100 degree	.0832	.128	.1472	.120
1.07 pounds of 96 degree and 1 pound of 100 degree	+.0129	+.016	+.0237	-.020

2. Domestic refined and imports. - Although much more than half of the total quantity of refined sugar consumed in continental United States originates as raw sugar either in foreign countries (principally Cuba) or in the insular areas of the United States, the great bulk of the sugar consumed is refined in continental United States. Of the total consumption of refined and other direct-consumption sugar in 1932, amounting to 5,840,000 tons, 1,232,000 tons, or 21 percent, consisted of beet sugar, itself a refined product, and 3,909,000 tons, or 67 percent, of cane sugar refined or prepared for immediate consumption in continental United States; 193,000 tons came in as refined sugar from the insular areas of the United States and 506,000 tons came in as direct consumption sugar from foreign countries, principally refined sugar from Cuba. Excluding beet sugar, the sugar refined in continental United States represented about 85 percent of the consumption of refined cane sugar, sugar refined in the insular areas of the United States, 4 percent, and imported refined sugar, 11 percent.

Sugar refining on a large scale is a new industry in Cuba. This explains the fact that total imports of refined sugar into the United States have increased rapidly during recent years, as shown by the following figures which represent the importations, in tons, of 99 and 100 degree sugar in total, from Cuba and from other duty paying countries. These figures do not include imports of direct consumption sugar less than 99 degrees.

Imports of 99 and 100 degree sugar

(Tons)

Year	From Cuba	Other countries	Total
1925	5,000	16,000	21,000
1926	66,000	16,000	82,000
1927	112,000	8,000	120,000
1928	197,000	21,000	218,000
1929	264,000	9,000	273,000
1930	272,000	17,000	289,000
1931	374,000	1,000	375,000
1932	439,000	2,000	441,000

3. Representative period. - The calendar years 1929, 1930, and 1931 constitute a representative period for purposes of section 336 and have been taken as the basis of cost comparison for refined sugar in this investigation.

4. Principal competing country. - Cuba is the principal competing country.

5. Comparability. - Refined sugar imported from Cuba is like or similar to the refined sugar produced in continental United States.

6. General basis of cost comparison. - The cost comparison relating to refined sugar does not include a comparison between cane sugar refined in Cuba and beet sugar, itself a refined product, produced in the United States. The latter comparison has been made already in these findings as part of the comparison of domestic and Cuban costs for the

purpose of determining the proper duty on raw sugar. The present comparison is between refined cane sugar imported from Cuba and refined cane sugar produced in the United States. The Cuban refined sugar comes in competition with cane sugar refined by domestic plants situated on the Atlantic and Gulf coasts, and only to an insignificant extent does it compete with cane sugar refined on the Pacific coast. The costs for all the domestic refineries on the Atlantic and Gulf coasts have been included in the comparison. The costs for the Cuban refined sugar represents three plants, which were the only refineries operating in Cuba throughout the 3-year period covered by the cost investigation. (Paragraph 11, below, should be considered in this connection.)

7. Principal markets. - The refined sugar produced by the domestic Atlantic and Gulf Coast refineries and the refined sugar imported from Cuba are marketed generally throughout the eastern half of the United States. West of the Alleghany Mountains the cane sugar encounters competition from beet sugar, increasing as one moves toward the West. The Commission has selected representative cities in each State in the eastern area and has ascertained the weighted average difference in the cost of transportation thereto of the domestic and the Cuban product. The average difference in costs of transportation to these selected markets is representative of the difference with respect to all refined cane sugar marketed in the United States.

8. Relation of costs to duty on raw sugar. - The duty on raw sugar constitutes a large part of the cost of sugar refined in the United States. Since the rate of duty on raw sugar during 1929 and down to June 17, 1930, was lower than the present duty, it has been

necessary, in the first instance, to compute the domestic cost of refined sugar in each of the three years exclusive of the duty on raw sugar. Having ascertained the difference between domestic and Cuban costs independently of the raw sugar duty, there was then added to the domestic cost of refined sugar for each of the three years, the duty under the Tariff Act of 1930 on that amount of 96 degree raw sugar necessary to make one pound of refined sugar, namely 1.07 pounds.

9. Costs ascertained in accordance with section 336. - The table which follows shows the average domestic cost of refined sugar, exclusive of the duty on raw sugar, for each of the three years covered by the cost comparison; these costs are f.o.b. refinery, all the refineries being situated on or near tidewater on the Atlantic and Gulf coasts. It also shows the cost of production of the Cuban sugar, including transportation to the Atlantic and Gulf ports of the United States.

The weighted average excess of the cost of transporting domestic refined sugar from the refineries to the representative markets in the United States over the cost of transporting the Cuban product from United States ports to the same markets is also shown in the table.

For the purpose of comparison of the difference in costs with the present rate of duty on refined sugar, there has been added to the domestic cost of production, exclusive of duty, the present rate of duty on 1.07 pounds of 96 degree raw sugar, namely 2.14 cents.

The excess of the domestic cost of refined sugar thus computed, over the Cuban cost, including the difference in the cost of transportation to markets in the United States, was 2.068 cents per pound in 1929, 2.182 cents in 1930, and 2.114 cents in 1931.

Table 3. - Refined sugar: Summary cost comparison including difference in inland transportation costs in the United States

(Cents per pound)

	1929	1930	1931
Domestic -			
Cost f.o.b. ports, excluding United States duty on raws	2.786	2.297	2.036
Add excess of domestic over Cuban cost of inland transportation to markets in United States	.014	.016	.017
Total	2.800	2.313	2.053
Cuban -			
Cost c.i.f. ports	2.872	2.271	2.079
Excess of domestic (+) or Cuban (-) cost, being amount by which duty on refined should be greater (+) or less (-) than the duty on 1.07 pounds of 96° sugar in order to equalize costs	-.072	+.042	-.026
Duty on 1.07 pounds of 96° raw sugar (Act of 1930)	2.140	2.140	2.140
Duty on raw plus or minus cost difference	2.068	2.182	2.114

10. In view of the considerable variation which appears from year to year in the cost differences shown in the preceding paragraph the Commission finds that the domestic and foreign costs as disclosed by this investigation do not furnish sufficient basis for any change in the present rate of duty on refined sugar so long as the present rate of duty on raw sugar remains in effect, or, in other words, for any change in the relative spread between the rates on 96 degree and 100 degree sugar.

11. Changes in competitive situation. - Paragraph 3 above indicated that the years 1929, 1930, and 1931 were used as the basis for this investigation and paragraph 6 indicated that Cuban costs were secured for three bone-char refineries "which were the only refineries operating in Cuba throughout the three-year period covered by the cost investigation." The conditions of refining in Cuba have changed considerably since the period covered by the cost comparison. There has been a considerable development of the use of new methods which permit the sugar to be refined in the same mills which crush the cane and make the raw sugar. Although there were only three refineries in operation during the period of the investigation and these use the bone-char process which is used in the United States, as many as nine refining units have been added to raw sugar mills since 1930 using the vegetable carbon process and several of these now ship refined sugar to this country. Sufficient time has not elapsed since these methods became of importance in practical use to make possible a determination of their effects upon the cost of production of refined sugar in Cuba. Opinions differ with respect to the amount of saving effected by these methods and the extent to which they will be introduced in the future.

Another factor which may require later consideration is the adoption under the National Industrial Recovery Act of codes which may increase refining costs in the United States without corresponding increases in Cuba.

12. Relation of change in duty on raw sugar to duty on refined. - The cost of raw sugar to domestic refiners includes the amount of the duty, at the rate applicable to imports from Cuba, on the quantity of raw sugar entering into the product. If the duty on raw sugar should be increased

or decreased, the cost of raws, and consequently the cost of refined, would change correspondingly. Since the Commission finds that no change in the relationship of the duty on refined sugar to the duty on raw sugar is warranted by this investigation, it follows that if any change in the duty on raws should be made, it should be accompanied by a parallel change in the duty on sugar above 96 degrees. This might be done by changing the rate on 100 degree sugar by the same absolute amount (cents or fraction of a cent) per pound as the duty on 1.07 pounds of 96 degree raw sugar is changed. However, substantially, though not precisely, the same result would be brought about by changing the rate on 100 degree (and on other degrees above 96) sugar by the same percentage by which the rate on 96 degree sugar was changed. This latter method would possess a material advantage from the standpoint of customs administration, and would continue the practice, which has been followed in the last four general tariff acts, of maintaining a uniform differential per degree throughout the entire scale from 75 to 100 degrees.

The Commission therefore finds that if, by Presidential proclamation under section 336, the rate of duty on 96 degree raw sugar is changed, the rate on sugar testing above 96 degrees should be changed by the same percentage.

C. Molasses and sugar sirups dutiable under paragraph 502

1. The Commission makes no findings with respect to the cost of production of molasses and sugar sirups dutiable under paragraph 502 of the Tariff Act of 1930.

Conclusion as to Cost Comparison under Section 336

So far as concerns costs ascertained for the purposes of section 336 of the Tariff Act of 1930 the Commission finds it shown by the investigation:

(a) That the general rate of duty expressly fixed by statute on sugars, tank bottoms, sirups of cane juice, melada, concentrated melada, concrete and concentrated molasses, testing by the polariscope not above 75 sugar degrees, and all mixtures containing sugar and water, testing by the polariscope above 50 sugar degrees and not above 75 sugar degrees, namely, 1.7125 cents per pound, and for each additional sugar degree shown by the polariscopic test, three hundred and seventy-five ten thousandths of 1 cent per pound additional, and fractions of a degree in proportion, when diminished by 20 percent under the terms of the Reciprocity Convention with Cuba, the principal competing country, namely to 1.37 cents for sugar not above 75 degrees and to 0.030 cent for each additional degree, does not equalize the difference in the costs of production, including transportation and other delivery charges to the principal markets in the United States, of the said domestic article and the like or similar foreign article produced in said principal competing country.

(b) That a decrease in said general rate of 0.428125 cent per pound on the specified sugars and mixtures testing not over 75 degrees, and a decrease of 0.009375 cent per pound in said differential, are necessary to equalize such difference; and

(c) That the general rate of duty necessary to equalize said difference on the specified sugars and mixtures testing not above 75 sugar degrees is 1.284375 cents per pound, and for each additional sugar degree shown by the polariscopic test, two hundred and eighty-one and one-fourth ten-thousandths of 1 cent per pound additional, and fractions of a degree in proportion.

FINDINGS OF THE COMMISSION

II. Under Section 332 of Title III of the Tariff Act of 1930

In addition to its cost investigation concerning sugar for the purposes of section 336 of the tariff act, the Commission has conducted a general inquiry on the subject in accordance with the provisions of section 332 of that act. The facts as thus ascertained are set forth in the attached summary of information along with those ascertained for the purposes of section 336, for the consideration of the President and the Congress in their bearing on general public policy concerning sugar. Certain observations drawn from these facts may here be stated.

1. Costs in Puerto Rico and the Philippines. - Although under the provisions of section 336 the costs of producing sugar in Puerto Rico and the Philippines cannot be taken into consideration in determining the rate of duty to be proclaimed by the President, the facts concerning the costs in those islands are of much significance in connection with problems of sugar policy.

For the 3-year period 1929-30 to 1931-32 the average cost of production of 96 degree sugar in Puerto Rico, including delivery to refineries in continental United States, was 3.282 cents per pound, as compared with 1.923 cents for Cuban sugar, the excess of Puerto Rican costs being 1.359 cents per pound. The delivered cost of Philippine sugar during this period averaged 2.717 cents per pound, or 0.794 cent more than that of the Cuban sugar.

If the statute provided that the duty should be based on comparison of Cuban costs with average costs in the United States including all its

insular areas, the resulting rate on sugar would be materially lower than 1.5 cents, the difference found between costs in Cuba and costs in continental United States and Hawaii. The average excess of domestic over Cuban costs during the 3-year period was 2.723 cents per pound for Louisiana sugar, 1.363 cents for Hawaiian, 1.359 cents for Puerto Rican, and 0.794 cent for Philippine raw sugar; the excess for beet sugar was 1.407 cents (raw basis). The weighted average excess of the cost for all of these areas over the costs in Cuba was 1.315 cents per pound.

Further details showing the total cost by areas from which the above cost differences were derived, are given in the following table.

Table 4. - Comparison of costs of Louisiana, Hawaiian, Philippine, and Puerto Rican cane sugar and of domestic beet sugar with cost of Cuban cane sugar

Costs in all areas are based on farm cost of production of beets and cane, and include imputed interest on investment at 6 percent

(Cents per pound)

	Simple average 3 years 1929-30 to 1931-32
A. Raw sugar - Louisiana vs. Cuba	
Louisiana sugar at New Orleans	4.646
Cuban sugar at seaboard refineries	1.923
Excess of Louisiana cost	2.723
B. Raw sugar - Hawaii vs. Cuba	
Hawaiian sugar at continental refineries	3.286
Cuban sugar at seaboard refineries	1.923
Excess of Hawaiian cost	1.363
C. Refined sugar - Beet vs. Cuban cane	
Beet sugar delivered to its markets	4.424
Refined cane sugar from Cuban raws delivered to its markets	2.918
Excess of beet sugar cost-refined basis	1.506
Excess of beet sugar cost-raw basis	1.407
Weighted average excess, beet sugar and Louisiana and Hawaiian cane sugar over Cuban sugar - raw basis	1.495
D. Raw sugar - Puerto Rico vs. Cuba	
Puerto Rican sugar at eastern seaboard refineries	3.282
Cuban sugar at seaboard refineries	1.923
Excess of Puerto Rican cost	1.359
E. Raw sugar - Philippines vs. Cuba	
Philippine sugar at Pacific and eastern seaboard refineries	2.717
Cuban sugar at seaboard refineries	1.923
Excess of Philippine cost	.794
Weighted average, Louisiana, Hawaiian, Puerto Rican, and Philippine raw cane sugar	3.204
Cuban sugar at seaboard refineries	1.923
Excess four cane areas over Cuban sugar	1.281
Excess beet sugar over Cuban sugar - raw basis	1.407
Weighted average excess, beet and four cane areas over Cuban sugar - raw basis	1.315

2. Competition of Philippine sugar. - The figures set forth in paragraph 1 show that the cost of production of Philippine sugar, which is free of duty, is much lower than in other areas of the United States. The relationship between Philippine costs and costs of domestic beet sugar, which is a refined product, may be made clearer by adding the cost of refining to the cost of Philippine raws. The average cost of refining (including loss of raw sugar in the process) in continental United States during the period covered by the investigation was 0.82 cent per pound. When this is added it gies a total cost of Philippine sugar in the refined state of 3.54 cents per pound, f.o.b. refineries on the Atlantic coast. The cost of production of beet sugar, f.o.b. factories, averaged 3.93 cents per pound during the period. The Philippine sugar at Atlantic ports is in a much more favorable position to reach markets of large consumption than is the beet sugar, since the beet sugar factories are mostly situated in the Mountain and Pacific States.

The low cost of Philippine sugar, and its ability to enter the United States free of duty, account for the very rapid increase in the proportion of Philippine sugar in the total consumption of continental United States, which rose from 5.4 percent for the 5-year period 1922-26 to 16.6 percent in 1932. Philippine competition has been a major factor in cutting down the imports of sugar from Cuba and lowering the price of the Cuban product.

3. Costs of sugar in full-duty countries. - Since the great bulk of the total United States dutiable imports of sugar, both raw and refined, comes from Cuba, the cost comparison for the purposes of section 336 necessarily relates to that country. The Commission would not have been warranted

for the purpose of general information under the provisions of section 332, in incurring the large expense of conducting a cost investigation in any other foreign country, none of which has for many years supplied any significant quantity of sugar to the United States.

Although the Commission has, therefore, no information as to the cost of producing sugar in foreign countries other than Cuba, the fact that since about 1910, with the single exception of the abnormal year 1920, Cuba has supplied nearly the total of duty-paid imports into the United States seems to indicate that the costs in other foreign countries, including delivery to the United States, have not fallen below the costs in Cuba (if at all) by as much as the preference in the duty (varying in amount from time to time according to the height of the duty), i.e., the difference between the general duty and the duty applicable to Cuba. The preference which would result from the rate of duty found by the present cost comparison is 0.375 cent per pound (on 96 degree sugar) in place of the current preference of 0.50 cent per pound. Since the average cost of production, f.o.b. sugar mill, in Cuba during the 3-year period 1929-30 to 1931-32 was 1.676 cents (including imputed interest on investment at 6 percent), the costs in any other foreign country would have to be as low as 1.3 cents per pound in order to fall below the costs in Cuba by as much as this differtial. It is true that especially in 1932 and in 1933 other foreign countries, like Cuba, have sold raw sugar at much less than 1.3 cents per pound (f.o.b. sugar mill) but they, like Cuba, have undoubtedly been selling below the cost of production. The average price of 96 degree sugar in the London market (converted to c. & f. New York) for 1932 was 0.88 cent per pound.

4. Growth of the sugar industry in the Western Hemisphere. - The production of sugar in the Western Hemisphere has increased nearly fourfold in the past 30 years. The output in 1902-03 was approximately 3,345,000 tons. In the season of 1928-29, the peak of production, it was 11,722,000 tons. there was a decline to about 9,270,000 tons in 1932-33, but this decline was practically entirely accounted for by the reduction in the Cuban production. If to this total production there is added the shipment of sugar from the Philippines to the United States, which was practically nothing 30 years ago and about 1,000,000 tons in 1932, the total supply of sugar in 1932 in the Western Hemisphere was nearly 13,000,000 tons.

Leaving aside for the moment the development of the sugar industry in Cuba, which is discussed below, the outstanding sugar producing areas of the Western Hemisphere are (a) the beet sugar area in the United States, (b) the insular possessions of the United States (other than the Philippines), and (c) certain countries of Latin America (other than Cuba). All three of these sources of supply have increased their output greatly since the beginning of the century. Beet sugar production increased from about 200,000 tons 30 years ago to over 1,415,000 tons in the past season. The production of cane sugar in the insular areas of the United States lying in the Western Hemisphere, together with the small production in continental United States itself, increased during this period from less than 1,000,000 to about 2,100,000 tons. The Latin American countries other than Cuba increased their output from about 1,000,000 tons to about 3,500,000 tons.

It is interesting to note that the increase in the supply of sugar, including beet sugar, in continental United States and insular areas, not including the Philippines, and the increase in all other areas of the

5. Position of Cuba in sugar supply. - Apart from the general causes which have brought about world-wide depression in all branches of business, special cuases have operated to bring about very severe depression in the sugar industry of Cuba. These cuases had their origin largely in the extraordinary conditions resulting from the World War.

Prior to the Convention of 1902, which granted a preferential of 20 percent on imports from Cuba into the United States, the production of sugar in Cuba was relatively much less important than it has been during the past two decades. It supplied less sugar to the markets of the United States than other foreign countries taken as a group. Under the preferential there was a rapid increase in Cuban output during the decade preceding the World War - 1904-13. Marked increased was taking place at the same time in the production of beet sugar in the United States and of cane sugar in Hawaii and Puerto Rico. It thus came about that even before the war broke out imports into the United States from foreign countries other than Cuba had virtually ceased, consequently the effective duty on sugar had become the rate on Cuban sugar, or 20 percent less than the general rate.

The war greatly reduced the output of sugar in Europe itself and reduced shipments from other countries which had been important sources of European supply, notably Java. Shortage of shipping checked increase of production in the insular areas of the United States. There was very strong demand, therefore, for Cuban sugar, which became an important factor in European markets by the end of the war. Whereas the Cuban output during the 5 years from 1912-13 to 1916-17 had averaged some 2,800,000 tons annually, in the crop year 1918-19 it amounted to about 4,450,000 tons, an increase of 60 percent. These conditions of demand and supply led the United States Government

to control the price of raw sugar, which was fixed at 5.88 cents per pound ex-duty at New York. When this control was removed the price suddenly shot up, averaging nearly 12 cents in 1920.

The resumption of peace soon changed the situation. Beet sugar production in Europe and production in Java and other sources of European supply began to recover about 1922. The total output in countries outside the areas supplying the United States rose from less than 12,000,000 tons annually at the close of the war to 14,350,000 tons in 1923 and to 19,850,000 tons in 1926. From 1924 on, moreover, production in the insular areas of the United States advanced rapidly. Notwithstanding this change in the supply situation, output in Cuba also continued for a time to increase, presumably as an after-effect of the high prices prevailing prior to 1925. In 1925 Cuba's sugar production was one fourth greater than the average for the preceding 5 or 6 years. As a result of this wide-spread expansion the total world output by 1925 had reached a point more than 50 percent greater than in 1919.

This increase in production elsewhere naturally affected the demand for Cuban sugar in European markets. During the war, and for a few years after its close, the exports to Europe of raw sugar from Cuba and of refined sugar from the United States, the latter representing virtually an indirect exportation of Cuban sugar, had been very large; the figure for 1919 was nearly 1,700,000 tons and for 1922 more than 2,000,000 tons. By 1926 the corresponding total had fallen to less than 1,100,000 tons, the greatly reduced exports of refined sugar from the United States accounting for the larger part of the decline.

The effect of the changed situation on prices appeared conspicuously in 1925. In 1924 the average price of raw sugar ex-duty at New York was 4.17 cents per pound, in 1925 it was 2.56 cents. For several years thereafter, however, the price situation was fairly stable. Although world production still tended upward, a cutting down of the deliveries from Cuba, chiefly as the result of action by the Cuban government, permitted that country to maintain the New York price of raws at between $2\frac{1}{2}$ and 3 cents. In 1929, however, government restriction was discontinued and there was a sharp increase in Cuban production, which reached the highest total ever recorded (5,780,000 tons) and led to a rather sharp break in sugar prices. Immediately thereafter the world depression which set in reduced the demand for sugar. Following 1929, moreover, there was a rapid increase in production in the United States and its insular areas. The effect on Cuba has been disastrous. The price of sugar has fallen to unprecedented low levels. Cuba's exports of sugar to the United States have fallen off enormously, and, although it has continued to ship nearly as much as before to other countries, the total output of the island has dropped rapidly; in the peak 1928-29 season it had been nearly 5,800,000 tons, in 1931-32 it was but little over half that amount, 2,920,000 tons, and the 1932-33 output is estimated at only 2,230,000 tons.

The whole economic life of Cuba is in large measure dependent on sugar. It constitutes normally seven eighths of the total value of exports from the country. The great decline in the quantity of sugar exported, and the still greater drop in the price, have caused a decrease in the total value of Cuba's exports sharper than almost any other country of the world has experienced. The export trade fell from an average of over 300 million dollars annually for the period 1925-29 to 81 millions in 1932. The buying power of Cuba for imported goods is, of course, dependent on her exports. The value of imports has dropped off by an even greater percentage than that of exports. From the United States alone the imports in 1926 and 1927 had been about 160 millions annually (still larger figures had prevailed before the break in the price of sugar); in 1932 Cuba bought only 28 million dollars worth of goods from this country.

The basic factors in the recent economic situation of Cuba have thus been (a) the abnormal stimulation of the sugar industry there as the result of the war, and the subsequent decline in demand for Cuban sugar caused by the recovery and increase of sugar production in Europe and the countries supplying the European market, (b) the rapid expansion during the last 10 years of the industry in the insular areas of the United States (especially in the Philippines) which ship to this country free of duty, (c) expansion of the United States beet sugar crop in the last few years, (d) the decline in United States consumption during the depression, and (e) increasing tariffs and restrictions on international trade throughout the world.

Table 5. - Sugar:- cane and beet: Relation of production in United States supply areas, to world production, to consumption in United States, to exports from United States and Cuba, and to the price of sugar

Production, consumption, and exports in thousands of short tons. Cane sugar on raw basis (except exports of refined sugar), beet sugar on refined basis

Period or year	Production in			Exports from U.S. supply area to countries other than U.S.			Consumption in continental U.S. from Cuba, U.S. and insular areas	Share of production in U.S. supply area which was -		Price of raw sugar in New York ex-duty
	Cuba	Cuba, U.S., and insular areas	Other countries	From U.S. 1/ (chiefly refined)	From Cuba (chiefly raw)	Total		Consumed in continental U.S.	Exported outside the area	
	Annual average for period							Percent	Percent	Cents per lb.
1912-16	2,800	5,020	14,710	240	380	620	3,260	64.9	12.4	3.24
1917-21	4,060	6,430	12,040	500	820	1,320	4,180	65.0	20.5	6.42
1922-26	4,860	7,600	15,790	370	910	1,280	5,730	75.4	16.8	3.51
1927-31	4,810	8,420	21,490	100	1,010	1,110	6,190	73.5	13.2	2.07
1932-33	2,570	7,170	21,170	2/ 50	2/ 1,020	2/ 1,070	-	-	2/ 14.8	2/ .92
	Year									
1919	4,450	6,740	10,960	740	950	1,690	4,450	66.0	25.1	6.36
1920	4,180	6,340	11,020	460	840	1,300	3,940	62.1	20.5	11.96
1921	4,410	7,020	11,640	470	550	1,020	4,570	65.1	14.5	3.46
1922	4,480	7,180	12,590	920	1,120	2,040	5,660	78.8	28.4	3.00
1923	4,040	6,240	14,330	220	400	620	5,210	83.5	9.9	5.22
1924	4,550	7,170	15,340	220	620	840	5,340	74.5	11.7	4.17
1925	5,740	9,020	17,850	380	1,420	1,800	6,130	68.0	20.0	2.56
1926	5,470	8,400	18,850	110	970	1,080	6,310	75.1	12.9	2.59
1927	5,050	8,090	18,920	130	930	1,060	5,930	73.3	13.1	3.04
1928	4,490	8,000	21,210	120	1,150	1,270	6,170	77.1	15.9	2.45
1929	5,780	9,330	21,500	100	1,220	1,320	6,490	69.6	14.1	1.99
1930	5,230	9,100	21,500	80	1,100	1,180	6,240	68.6	13.0	1.49
1931	3,500	7,570	24,320	50	670	720	6,100	80.6	9.5	1.38
1932	2,920	7,370	22,120	50	1,020	1,070	5,820	79.0	14.5	.92
1933	2,230	6,970	20,220	-	-	-	-	-	-	-

Source: Production statistics (crop years), and consumption statistics (calendar years) are based on Willett & Gray. Export statistics (fiscal years, 1907-18; calendar years 1919-33) are official trade statistics of the United States and of Cuba.

1/ Does not include negligible quantities exported from U.S. insular areas. 2/ Calendar year 1932 only.

6. Relation of prices to cost of production of sugar. - There have been great changes both in the prices and in the cost of production of sugar during the past 20 years. Prices, however, have fluctuated more violently than costs. In 1913, namely, 20 years ago, the price of raw sugar in Cuba reached the pre-war low level and averaged for the year slightly less than 2 cents per pound (1.92). The same sugar delivered in New York averaged about 2.16 cents per pound. Raw sugar prices rose gradually during and immediately after the war and reached a peak of about 20 cents per pound in May 1920, the average for the year being about 11½ cents.

A rapid decline began in the latter part of 1920 which carried the price down to 2 cents by the end of 1921. Prices again recovered and in 1923 the price in Cuba averaged about 5 cents per pound or about 5¼ cents c. & f. New York. Beginning in 1924 there was a gradual decline in prices until the spring of 1932 when the Cuban price of 96 degree raw fell below 1/2 cent per pound. The average for the entire year 1932 was 0.72 cent in Cuba or about 0.92 c. & f. New York.

The prices of refined sugar in New York have not fluctuated so violently as the prices of raw sugar ex-duty, because of the leveling influence of the duty on raw sugar which is included in the cost of refined sugar. In 1913, the lowest pre-war level, the price of fine granulated sugar in New York averaged slightly over 4¼ cents per pound. The price moved upward during and after the war along with that of raw sugar and then declined but not so rapidly as the price of raw sugar ex-duty. The low point of about 3.7 cents per pound was reached in June 1932, with an average for the entire year of 4.01 cents. This figure is even lower than the lowest pre-war quotation for refined sugar, namely, 4.03 cents per pound in December 1913, with an average for that year of 4.26 cents.

The Commission has obtained at various times the cost of production of sugar for many of the years since 1913. The costs during and immediately following the war are not especially pertinent for present purposes except that they indicate that, although costs rose rapidly during this period, they lagged behind the rising prices and similarly that the cost followed prices downward but less precipitously than the decline in prices. The Commission, however, has two sets of cost data for sugar approximately 10 years apart, which are of some significance for comparative purposes, namely, the costs for the 2 crop years 1921-22 and 1922-23 and for the crop years 1929-30 to 1931-32 covered by the present investigation. For such comparison it is necessary to use, for 1929-30 to 1931-32, costs in which the item of sugar beets or sugar cane used as material is taken not as the farm cost of production of the entire quantity but the farm cost of company-grown and the price paid for purchased beets or cane. Costs have declined during the 10 years in all the areas for which costs are available for the two periods, i.e., all important areas except the Philippines, but the decline has been more pronounced in some areas than others.

During the 10-year period the cost of refined beet sugar declined from about 5.93 cents per pound to about 4.39 cents. Raw sugar costs for Louisiana for the 10-year period declined less than in other areas, namely, from about 4.80 cents per pound to 4.04. Hawaiian raw sugar costs have declined from about 4.96 cents per pound to 2.94. Puerto Rican raw sugar costs have likewise declined, from about 5.12 cents per pound to 2.97. Cuban cost of raw sugar has declined from about 3.19 cents per pound in 1921-23 to about 1.60 cents in the latest cost period, (calculating costs in both periods upon the basis of costs of company-grown cane and the price

of purchased cane). The decline in costs in the 10-year period upon the cost and purchsed basis for the raw material were therefore about 1.54 cents per pound for refined beet sugar, 0.76 cents for Louisiana raw sugar, 2.02 cents for Hawaiian sugar, 2.15 cents for Puerto Rican sugar, and approximately 1.60 cents per pound for Cuban raw sugar.

The receipts from the sale of sugar in all the areas, including Cuba, have also declined during the 10-year period but the relation of the change in cost to the change in receipts is irregular among the various areas. In some areas costs and prices have moved down approximately together whereas in others, especially in Cuba and Louisiana, receipts have declined more precipitously than costs, as the result of which prices are considerably below costs of production. Further details of the relation of costs to receipts and prices of sugar are shown in the summary of information attached to this report.

In the relation of costs to prices, as in the increase in production, Cuba is again outstanding and presents special problems. One of them, of course, is the 2 cents per pound disadvantage represented by the duty on raw sugar imported from Cuba as compared with duty-free sugar from the continental and insular areas of the United States. Special discussion, therefore, of the Cuban situation is contained in the following subsection.

7. Relation of prices to cost of production of Cuban sugar. - For a number of years after the close of the war the price of Cuban sugar apparently materially exceeded the costs of production, even though costs at that time were considerably higher than during more normal years. From 1925 to 1928 the price seems to have been sufficient to cover cost of production including a normal return on capital. The present investigation

shows that during the season of 1929-30 the average cost of Cuban sugar laid down at New York was 2.06 cents per pound (including 6 percent imputed interest on investment). The cost was probably not materially different during the years 1925-28, when the price of raws at New York, ex-duty, averaged about 2½ to 3 cents per pound. Since 1929, on the other hand, Cuba has been compelled to sell sugar at prices below cost of production. In 1930, as against the cost of 2.06 cents, the average price in New York ex-duty was 1.49; in 1931, against a cost of 1.98, the average price was 1.38 cents; and for 1932, with a cost of 1.73 cents, the price averaged only 0.92 cent, or not much more than half the cost of production.

Moreover, attention should be called in this connection to the fact that the decline in the costs of sugar production in Cuba from year to year during the period covered by the investigation was itself in considerable part a result of the low price of sugar, which compelled the cutting of wages to a bare subsistence minimum. It must not be supposed that the average Cuban cost found by the Commission for the year 1931-32, amounting, exclusive of transportation to the United States, to 1.50 cents per pound (including imputed interest on investment) is a normal cost.

Putting the matter another way, Cuba has been compelled during the last few years to accept a swiftly falling price for raw sugar and at the same time to cut down greatly its shipments to the United States, because Cuban sugar, in order to compete in the United States markets, must pay a duty of 2 cents per pound (96° base) whereas the constantly increasing supply of insular sugar enters that market free of duty. Cuba could find no relief from the situation by increasing its exports to European countries,

for with reduced demand and heavy production in Europe itself, and in Oriental countries, the price there also was falling greatly.

The decline in the price of sugar has naturally affected materially the prosperity of the sugar industry in other countries as well as in Cuba. Presumably countries of surplus production, such as some of the Latin-American countries and Java, have sold their output at less than the cost of production. The insular areas of the United States have found their sugar industry less profitable than before but since they ship practically all their output to the United States market, where they have received a price 2 cents per pound higher than Cuba has received, they have scarcely been under the necessity of selling appreciably below the cost of production.

8. Restriction of sugar supply. The facts above summarized regarding the position of the sugar industry in the areas supplying the United States shows clearly that there is a great excess of productive capacity. The demand for sugar in the United States is relatively inelastic. Consumption has fallen off somewhat during the depression but probably not over 10 percent. It will doubtless again increase somewhat with the restoration of prosperity. If Cuba were now producing its former normal output, and if the United States and its insular areas should continue to produce as much as they are now producing, the total output would be 9 or 10 millions tons annually. Even under wholly normal conditions consumption in the United States, its insular areas, and Cuba would not greatly exceed 7,000,000 tons. There is little or no prospect of increased demand for

the export of sugar to countries outside the United States supply area; indeed it is desirable that such exports should be cut down in order to restore world sugar prices to a normal level.

There has been much discussion of plans for a world-wide limitation of sugar production. The difficulties which face such a plan are obviously great. In view of the uncertainty as to the possibility of accomplishment in this direction, it is appropriate for the United States, its insular areas, and Cuba to undertake, if practicable, measures for restricting output within that area and bringing it down more nearly to the consuming capacity of the area itself.

A reduction in the duty on Cuban sugar, without limitation of the supply of sugar on the United States market, would work serious injury to the producers of cane and beet sugar in continental United States, as well as to producers in insular areas in varying degrees. Moreover, Cuban sugar producers would, in the absence of such limitation, lose much of the advantage resulting from a reduction in the duty; although they might get a larger share of the United States market by driving other areas out of production, they would probably obtain a very low price.

It would not be appropriate for the Commission in this report to make specific suggestions with regard to the method or methods of limiting the supply of sugar on the United States market, the extent of the limitation, or the allocation of shares to the several producing areas. The Commission is aware that the Administration has already given much thought to the problem. It should be possible to work out an agreement which is fair both to the producers of sugar in the several areas and to the consumers, who constitute the entire population.

9. Future conditions of competition as to refined sugar. - At the hearing in this investigation certain witnesses referred to the changes in methods of sugar refining which were taking place or were expected to take place in Cuba and which they believed might affect materially the competitive position of the domestic refining industry in the future. Emphasis was laid upon the importance of methods of refining by the use of activated carbons, and especially of the combination of refining by these methods with the operation of raw sugar "centrals".

The Commission has been unable to determine, even by rough approximation, how much the costs of refining in Cuba are likely to be affected in the future by these methods. Up to the close of 1931, the last year covered by the Commission's cost investigation, the total production of refined sugar in Cuba by activated carbon methods was very small; since that time such production has increased markedly and it is understood to represent at present between one third and one half of the total output of refined sugar in the islands. The time that has elapsed since the use of these methods became extensive is, however, too short to permit a satisfactory determination of operating costs, or of the extent to which these methods will cause an increase in the imports of refined sugar from Cuba, which had already

been increasing steadily before these methods were adopted.

The activated carbon processes can, of course, be used in refineries which are entirely independent of raw sugar centrals; whether when so used they would be cheaper or more efficient than the older bone-char filter method has not yet been demonstrated. The last two large refineries established in the United States (in 1922) and in Cuba (in 1925) both use the bone-char process. The principal reason assigned by witnesses for believing that these newer methods of refining would materially reduce costs in Cuba is that they can be and are being employed in connection with raw sugar centrals, thus permitting continuity of operations between the production of raw sugar and its conversion into refined. The economical operation of the bone-char method requires a very large plant - probably too large to be dependent upon raw sugar from any single central. The machinery and equipment for the activated-carbon processes may be installed in smaller and more compact units and can, therefore, be installed in connection with any large raw sugar mill. When this equipment is used in a mill, certain of the preliminary refining operations, which under the present methods are ordinarily performed in the independent bone-char refineries by separate equipment, can be carried on with the same equipment which is used for making raw sugar. For this and other reasons, including the saving in general and administrative expense, repairs, depreciation, interest, etc. and in the use of bags for raw sugar and the use as fuel of bagasse (cane from which the juice has been extracted), an economy in total costs is claimed. It is probable that very small sugar mills cannot with advantage undertake to refine their product even by these methods, but in recent years there has been a notable increase in the number of large centrals in Cuba - mills having an annual capacity of from 100,000 to 200,000 tons.

The advantages claimed for the refining of sugar in the same plant which makes the raw product can be gained only during the cane-grinding season, which generally lasts 2 to 4 months. After that season is over, either the refining equipment, like the raw sugar equipment of the central, must lie idle until the next season, or it must operate on raw sugar previously produced, either by the same central or by others, and stored pending refining. With reference to the economy derived from the use of bagasse as fuel for refining as well as for the raw sugar operations, it should be noted that the quantity of bagasse is at the outside sufficient only to furnish power for refining the raw sugar produced by the same mill, and even for that purpose some fuel oil would undoubtedly have to be purchased if refining is carried on.

There are certain difficulties which tend to offset, at least in part, the advantage of conducting refining operations in conjunction with raw sugar centrals. One of these is the lack of satisfactory water supply in many areas in Cuba, large quantities of water of good quality being required for refining processes. Another is the fact that success in sugar refining requires great technical skill and that only a concern of large size can maintain an efficient staff of technicians. The vegetable char process is not adapted to the production of soft sugar. Moreover, only large refineries can economically produce a variety of special types of sugars, and put up sugar in a variety of special packages. The sale of these special types and the use of special packages represent a large and growing part of the business of some of the larger American refining companies. Concerns which produce only ordinary granulated sugar and sell it only in large packages or in bulk are hampered in their competition with concerns which offer a "full line."

It is entirely possible that these new methods of refining may in fact prove of increasing importance in the competitive situation, but the time has not yet arrived to measure their influence or to make any comparison of domestic with Cuban costs as affected by these methods.

Another point bearing on the competition between Cuban and domestic sugar is this:

When there were only two or three refineries in Cuba and their output was limited to 200,000 or 300,000 tons of sugar per annum, even though largely shipped to the United States, a large part could enter ports where there were no domestic refineries and from these points a considerable market could be reached with substantial transportation advantage over domestic refineries. With the amount of sugar refined in Cuba now doubled, it becomes necessary to enter American ports where domestic refineries are located and much of the former advantages of shipping to restricted areas has been lost. Bulk refined sugar produced in Cuba must now generally sell at a lower net price than full lines of domestic sugar in order to hold a part of the market.

Appended to this statement is a Summary of Information obtained in this investigation.

Respectfully submitted.

Robert L. O'Brien,
Chairman.

Thomas Walker Page,
Vice Chairman.

Edgar B. Brossard, *

John Lee Coulter,
Commissioners.

*See supplemental statement by Commissioner Edgar B. Brossard attached.

Supplemental Information Submitted by Commissioner Edgar B. Brossard

In a letter to President Franklin D. Roosevelt, dated April 11, 1933, before we knew what the results of the cost investigation then in process would be, the Tariff Commission said that "the duty on sugar cannot justly be based on a difference between domestic and foreign costs of production." The Commission also recommended the limitation of imports by quotas to bring about a reasonable price for sugar. That letter outlines what seems to me to be a reasonable way of handling the sugar problem.

The policy outlined there if carried out would help to reestablish the sugar industry of this country and of Cuba on a more satisfactory basis, and it offers hope to the farmers of reasonable returns from more stabilized conditions. Quotas should be arranged so that the consumer of sugar is protected against an excessive price and at the same time assured an adequate and regular supply of sugar. I agree with my colleagues in recommending this quota method of handling the sugar problem.

A copy of the Tariff Commission's letter to the President and some supplemental data on the comparison of domestic and Cuban costs of production of sugar are presented here because I believe they are significant and should be taken into consideration by the President and the Congress, and because they are of wide public interest.

April 11, 1933

My dear Mr. President:

In view of the possibility of early action by our Government in regard to tariff bargaining, I venture to send you certain conclusions that have been reached by the Tariff Commission from our study of the sugar industry. We hope to have the complete report ready for submission within a few weeks, but we have thought that an earlier statement of certain facts might be helpful to the Administration.

It is evident from our study that the duty on sugar can not justly be based on a difference between domestic and foreign costs of production. The situation in Cuba, which is the chief competing foreign country, is such that the higher the American tariff may be, the lower are the costs of producing sugar in Cuba.

Cuba must fix the price at which she sells sugar at a point which will enable her product to enter the American market. The result is that the price has gone down to a point which is disastrous both for American and for Cuban producers. It is evident that no increase of the American tariff can relieve the resulting situation in this country or in Cuba.

For the reinstatement of comparative prosperity in the domestic industry, and also to such an extent in Cuba as may enable her again to become a customer on a considerable scale for American exports, it is necessary that the price of sugar should be somewhat higher than has prevailed recently.

To raise the price, it will be necessary to limit the supplies of sugar offered for sale in the United States. This can not be done by an increase of the tariff, but must be done by limiting imports to this country. Such limitation should be imposed not only upon Cuba, but likewise upon the Philippine Islands, and it might be extended, under the powers conferred upon the Administration thru the Farm Relief Act, to the production of sugar in Hawaii, in Puerto Rico, and, if necessary, in the continental United States.

Should some such quota system meet with the approval of the Administration, the duty on Cuban sugar might be reduced on a limited importation by such amount as the Government might find expedient, with a view partly to revenue and partly to the restoration of the purchasing power of Cuba.

If it be desired, the Tariff Commission is prepared to render assistance in working out such quotas for the various sources of sugar supply as would appear to be most feasible.

Respectfully,

(Signed) Robert L. O'Brien,
Chairman.

The President,
The White House.

Other Methods of Computing Costs of Delivery of Beet Sugar and Sugar Refined from Cuban Raw Sugar, and Weighted Average Excess of Domestic over Cuban Costs Calculated on Basis of Delivered Costs According to these Methods

The difference between the delivered cost of domestic beet sugar and the delivered cost of Cuban sugar depends in considerable measure on the basis adopted for calculating costs of delivery to markets in the United States. The question of choice between different methods of computing transportation costs scarcely arises in the case of the comparison between Louisiana cane sugar and Cuban sugar or the comparison between Hawaiian cane sugar and Cuban sugar. The markets for the raw sugar of all three of these areas are, for the purposes of section 336, refineries situated on the seaboard of continental United States and for the most part refineries on the Atlantic and Gulf coasts. On the other hand, the markets for beet sugar, itself a refined product, and for the sugar refined from Cuban raw sugar are distributed throughout a large part of the United States.

The method of computing delivery costs for beet sugar and sugar refined from Cuban raw sugar, which has been used by the Commission in its findings, and which has been set forth in the preceding pages of this report, may be called Method 1. It consists in computing the actual average freight paid on beet sugar from the factories to all the markets supplied by them and computing the freight on sugar refined from Cuban raw sugar from the refineries (in the United States and in Cuba) to all markets where such sugar is sold in the United States. For the information of the President and of the Congress and of persons interested in sugar problems, the Commission also has calculated delivery costs according to two other methods and on the basis of each of these methods it has computed the excess of the delivered cost of

beet sugar over the delivered cost of sugar refined from Cuban raw sugar, and has likewise computed a weighted average excess of domestic over Cuban cost, in which the excess of cost for beet sugar is combined with the excess of cost for Louisiana and for Hawaiian sugar, respectively, over Cuban sugar. These methods of computing costs of delivery may be designated as Methods 2 and 3, respectively.

Method 2. - Under this method the transportation costs, both for beet sugar and for sugar refined from Cuban raw sugar, are calculated, not to all markets supplied by each, but to the principal markets where the two kinds of sugar meet in competition, namely markets of the interior States covering roughly the territory between the line of the Missouri River and the line of the Allegheny Mountains.

Method 3. - Under this method the delivery costs taken for beet sugar are the same as under Method 2, that is they cover transportation to the principal markets in the United States for beet sugar which are those in the interior of the country, and the markets taken for the sugar refined from Cuban raw sugar are the principal markets for that sugar on the Atlantic and Gulf ports where the sugar is either refined in domestic refineries or is entered as refined sugar from Cuba. These markets for the Cuban sugar are, by name, Boston, New York, Philadelphia, Baltimore, Norfolk, Wilmington, N.C., Charleston, Savannah, Brunswick, Jacksonville, Miami, Key West, Pensacola, Mobile, New Orleans, and Texas ports.

The statistical material concerning the cost of transportation of beet sugar to the principal markets in the interior States, required for the purposes of Methods 2 and 3, and the cost of transportation of sugar refined from Cuban raw sugar to the same principal markets in the interior States, required for the purpose of Method 2, are set forth in a supplemental note following the tables in which the results of the calculations are presented.

Table 1 presents a comparison of the delivered costs of beet sugar and sugar refined from Cuban sugar on the basis of each of these three methods of computing transportation costs. The table gives the transportation costs themselves according to each method and then combines these transportation costs with the costs of production of beet sugar f.o.b. mills and the costs of production of sugar refined from Cuban raw sugar f.o.b. Atlantic and Gulf coast refineries or c.i.f. (ex duty) Atlantic and Gulf coast ports at which the product of Cuban refineries is received. It will be seen that for the 3-year period the excess of the delivered cost of beet sugar over the delivered cost of sugar refined from Cuban raw sugar was, on the basis of Method 1 of calculating transportation costs, 1.506 cents per pound (this figure being repeated from table 38 in the report of the Commission); according to Method 2 the corresponding excess was 1.442 cents; and according to Method 3, 1.868 cents. The table also shows the equivalent of these excess costs expressed in terms of raw sugar, for use in combination with the excess of the cost of Louisiana and Hawaiian raw sugar over the cost of Cuban raw sugar.

Table 1. - Beet sugar and sugar refined from Cuban raw sugar: Costs of transportation computed on different bases, and corresponding total delivered costs (including cost at factory as shown in table 18)

(Cents per pound)

	1929-30	1930-31	1931-32	Simple average 3 years
Cost of production on basis of farm costs of beets and cane -				
Beet sugar f.o.b. mills (table 18)	4.112	4.002	3.671	3.928
Sugar refined from Cuban raw sugar (as of Atlantic and Gulf ports; i.e., f.o.b. domestic refineries at such ports or including freight from Cuban refineries to such ports)	2.819	2.718	2.423	2.653
Transportation Costs (within United States)				
Method 1 (same as in table 37) -				
Beet sugar, to all markets supplied by it	.484	.477	.527	.496
Sugar refined from Cuban raw sugar, from ports to all markets supplied by it	.267	.263	.265	.265
Method 2 -				
Beet sugar, to principal markets in interior States	.581	.588	.610	.593
Sugar refined from Cuban raw sugar, from ports to same markets	.427	.427	.423	.426
Method 3 -				
Beet sugar, to principal markets in interior States	.581	.588	.610	.593
Sugar refined from Cuban raw sugar, from ports to principal markets on Atlantic and Gulf seaboard	0	0	0	0
Total Delivered Cost				
Method 1 -				
Beet sugar	4.596	4.479	4.198	4.424
Sugar refined from Cuban raw sugar	3.086	2.981	2.688	2.918
Excess for beet sugar	1.510	1.498	1.510	1.506
Equivalent per pound of raw sugar 1/	1.411	1.400	1.411	1.407
Method 2-				
Beet sugar	4.693	4.590	4.281	4.521
Sugar refined from Cuban raw sugar	3.246	3.145	2.846	3.079
Excess for beet sugar	1.447	1.445	1.435	1.442
Equivalent per pound of raw sugar 1/	1.352	1.350	1.341	1.348
Method 3 -				
Beet sugar	4.693	4.590	4.281	4.521
Sugar refined from Cuban raw sugar	2.819	2.718	2.423	2.653
Excess for beet sugar	1.874	1.872	1.858	1.868
Equivalent per pound of raw sugar 1/	1.751	1.750	1.736	1.746

1/ Calculated by dividing by 1.07, the quantity of raw cane sugar required to produce 1 pound of refined sugar.

Table 2 combines the figures of excess of costs of beet sugar over sugar refined from Cuban raw sugar, calculated according to each of the methods specified, with the excess of the cost of Louisiana and Hawaiian raw sugar over Cuban raw sugar. The figures for the Louisiana-Cuba and the Hawaii-Cuba cost comparison are the same as in table 38 in the report of the Commission. The weights used for computing the weighted average excess of domestic cost are also the same as in table 38. It will be seen that the several methods of computing the delivery costs of beet sugar in comparison with sugar refined from Cuban raw sugar result in the following figures for the weighted average excess of domestic over Cuban costs, for the 3-year period:

Method 1 --------1.495 cents per pound
Method 2 --------1.466 " " "
Method 3 --------1.661 " " "

Table 2. - Domestic and Cuban Sugar: Weighted average excess of domestic over Cuban costs, including delivery to markets in the United States, delivery costs for beet sugar and sugar refined from Cuban raw sugar being computed on the different bases shown in table 1

(Cents per pound)

	1929-30	1930-31	1931-32	Simple average 3 years
1.				
Excess of cost of -				
Beet sugar over sugar refined from Cuban raw sugar on basis of Method 1 of computing costs of delivery	1.411	1.400	1.411	1.407
Louisiana raw sugar over Cuban raw sugar	3.107	2.400	2.663	2.723
Hawaiian raw sugar over Cuban raw sugar	1.410	1.299	1.380	1.363
Weighted average excess of cost	1.569	1.435	1.481	1.495
2.				
Excess of cost of -				
Beet sugar over sugar refined from Cuban raw sugar on basis of Method 2 of computing costs of delivery	1.352	1.350	1.341	1.348
Louisiana raw sugar over Cuban raw sugar	3.107	2.400	2.663	2.723
Hawaiian raw sugar over Cuban raw sugar	1.410	1.299	1.380	1.363
Weighted average excess of cost	1.541	1.410	1.447	1.466
3.				
Excess of cost of -				
Beet sugar over sugar refined from Cuban raw sugar on basis of Method 3 of computing costs of delivery	1.751	1.750	1.736	1.746
Louisiana raw sugar over Cuban raw sugar	3.107	2.400	2.663	2.723
Hawaiian raw sugar over Cuban raw sugar	1.410	1.299	1.380	1.363
Weighted average excess of cost	1.730	1.612	1.641	1.661

Costs of Transportation of Beet Sugar and Sugar Refined from Cuban Raw Sugar to the Interior Region of the United States

As was shown in a section of the Commission's report (see pp.82-85) the principal area in which beet sugar and sugar refined from Cuban raw sugar meet in competition in the same markets is the interior region extending broadly from the line of the Missouri River on the West to the line of the Allegheny Mountains on the East. The Commission has computed the costs of transportation of these two kinds of sugar, respectively, to this interior region. The States and parts of States treated as included in the interior region are named in table 3. The method of computing the transportation costs is as follows:

The Commission selected in each State or part of a State in the region a representative city; the names of these cities are shown in table 3. The rates to each city from the several factories supplying it were combined into a general average weighted by the quantity shipped by each factory. The rates on beet sugar to the several cities, as thus ascertained, were combined into a general average for the interior territory as a whole by giving to the average rate for each city a weight corresponding to the total shipments of beet sugar (by the factories covered by the investigation) into the State, or part of a State, in which the city was situated. Similarly the rates on refined cane sugar from Atlantic and Gulf points were weighted by the shipments of that kind of sugar to these areas.

Table 3 shows the rates of freight and the weights assigned to them in computing the general averages.

It will be seen that the average cost of transportation of beet sugar to the area constituting the principal competitive market, from the factories supplying that market, was 0.581 cent per pound in 1929, 0.588 cent in 1930, and 0.610 cent in 1931. The corresponding figures from Atlantic and Gulf points for sugar refined from Cuban raw sugar were 0.427, 0.427 and 0.425 cent, respectively.

Table 3. - Beet sugar and sugar refined from Cuban raw sugar: Freight charges to competitive markets for refined beet sugar and Cuban raw sugar refined in Cuba and United States refineries

(Rates per 100 pounds)

Area and representative city	U.S. beet sugar: Average annual shipments to area for 3-yr. period	U.S. beet sugar: Weighted average freight rate from producing areas to representative city			Cuban cane refined sugar: Average annual shipments to area for 3-yr. period	Cuban cane refined sugar: Weighted average freight rate from U.S. refining centers and seaboard ports of entry of Cuban refined sugar to representative city		
		1929	1930	1931		1929	1930	1931
	1,000 lbs.				1,000 lbs.			
Northern New York (Buffalo)	33,990	$0.6865	$0.8932	$0.8368	59,027	$0.2971	$0.3013	$0.2791
Western Pennsylvania (Pittsburgh)	32,606	.6443	.8988	.8602	116,541	.3266	.3245	.3253
Michigan (Detroit)	73,016	.4942	.4741	.5573	179,097	.4133	.3906	.3633
Ohio (Cleveland)	61,348	.7764	.7247	.7778	349,523	.4168	.4115	.4047
Indiana (Indianapolis)	48,104	.6636	.6847	.7054	137,547	.4800	.4924	.4800
Illinois (Chicago)	335,941	.5933	.5652	.5752	197,972	.4559	.4628	.4690
Wisconsin (Milwaukee)	91,693	.5863	.5942	.5814	70,690	.4713	.4757	.4907
Minnesota (Twin Cities)	156,200	.5183	.5073	.4700	25,492	.6365	.6513	.6449
Iowa (Des Moines)	107,959	.4746	.4487	.4637	33,252	.5764	.5828	.5796
Kansas (Kansas City, Kans.)	91,593	.5931	.5920	.5252	8,140	.6025	.6188	.6181
Nebraska (Omaha)	101,572	.5435	.5398	.5381	2,015	.6579	.6562	.6251
Missouri (St. Louis)	147,635	.6098	.6048	.5961	41,187	.4870	.5450	.5017
Oklahoma (Oklahoma City)	58,808	.6744	.6945	.6998	48,075	.6145	.6029	.5961
Arkansas (Little Rock)	14,255	.7614	.7572	.7533	66,777	.4776	.4667	.4810
Texas (Dallas)	102,895	.6544	.6622	.6640	266,001	.3800	.3791	.3767
Average	1,457,628	.5813	.5877	.6098	1,601,336	.4275	.4275	.4252

Adjustment of Sugar Beet Costs for 1929

As already stated, the cost for beet sugar for 1929, used as a basis for all cost comparisons with Cuban sugar heretofore presented, rested on the questionable assumption that the cost of production of sugar beets in 1929, which was not actually ascertained by the Commission, was the same as in 1930. The Commission has also made an estimate of the cost of production of sugar beets in 1929, taking into consideration available information concerning changes between 1929 and 1930 in the various factors affecting costs. This estimate gives a cost of production for sugar beets in that year somewhat higher than the figure used in the previous tables. When these adjusted figures for 1929 are substituted for the other figures, the excess of the cost of beet sugar over Cuban sugar for that year is of course increased by the same amount and this affects the average cost difference for the 3-year period. Table 4 shows the excess of cost of beet sugar over sugar refined from Cuban raw sugar, on the basis of the three different methods of computing delivery costs above described, with the use of these adjusted 1929-30 costs for beet sugar. It will be seen that on this basis the weighted average excess of the cost of beet sugar, Louisiana sugar, and Hawaiian sugar over the cost of Cuban sugar for the 3-year period was 1.532 cents when the delivery costs in the comparison between beet sugar and Cuban sugar are calculated according to Method 1; the cost difference becomes 1.503 cents when delivery costs are computed according to Method 2; and 1.698 cents when computed according to Method 3.

Table 4. - Domestic and Cuban sugar: Excess of domestic over Cuban costs using estimated adjustment of cost of production of sugar beets in 1929 (see text)

Note: The substitution of these estimated sugar-beet costs for those used in table 18 (the basis for the excess of beet-sugar over Cuban costs in table 2) increases the total cost of beet sugar in 1929-30 by 0.253 cent per pound. The excess of domestic over Cuban costs is increased by the same figure; when expressed in terms of raw sugar it is increased by 0.236 cent. The weighted average excess of cost for beet, Louisiana and Hawaiian sugar over Cuban sugar is increased, for 1929-30, by 0.112 cent per pound. The simple average excess of domestic over Cuban cost for the 3-year period is, of course, increased by one third as much as the excess for 1929-30 alone is increased.

(Cents per pound)

	1929-30 adjusted	1930-31	1931-32	Simple average 3 years
Excess of cost of beet sugar over sugar refined from Cuban raw sugar when costs of delivery are computed according to specified method -				
Method 1	1.763	1.498	1.510	1.590
Method 2	1.700	1.445	1.435	1.527
Method 3	2.127	1.872	1.858	1.952
Same, reduced to raw sugar basis -				
Method 1	1.648	1.400	1.411	1.486
Method 2	1.589	1.350	1.341	1.427
Method 3	1.988	1.750	1.736	1.825
Excess of cost of Louisiana raw sugar over Cuban raw sugar	3.107	2.400	2.663	2.723
Excess of cost of Hawaiian raw sugar over Cuban raw sugar	1.410	1.299	1.380	1.363
Weighted average excess of cost of beet sugar, Louisiana sugar and Hawaiian sugar over cost of Cuban sugar, when delivery costs in the beet-sugar comparison are computed according to specified method -				
Method 1	1.681	1.435	1.481	1.532
Method 2	1.653	1.410	1.447	1.503
Method 3	1.842	1.612	1.641	1.698

Cost of Louisiana Cane and Domestic Beet Sugar Compared with Cost of Cuban Sugar

In table 5 is shown the comparison of Louisiana cane sugar and domestic beet sugar with the cost of Cuban cane sugar. This comparison differs from any shown in the other tables by the exclusion of the cost of Hawaiian sugar. It includes the adjusted costs of growing sugar beets for 1929 and the transportation costs calculated by Method 3. This comparison shows the excess of domestic cost of raw sugar over the Cuban cost of raw sugar on the average for the 3-year period to be 1.915 cents per pound. The present duty is 2 cents a pound.

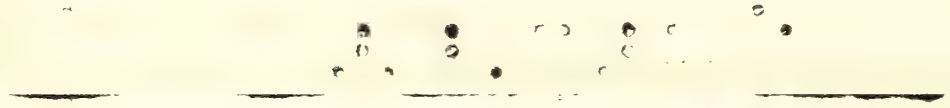
In this table the delivery costs for beet sugar and for sugar refined from Cuban raw sugar are computed by one method only, namely Method 3. Different results would of course be secured by the application of the delivery costs according to Methods 1 and 2.

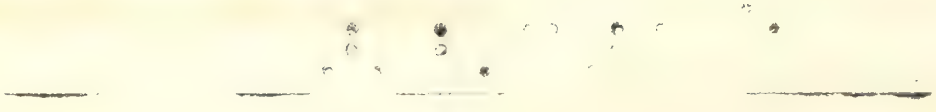
Table 5. - Raw sugar.- Comparison of Louisiana Cane and United States Beet with Cuban Costs of Sugar: Cane Sugar at Refineries or United States Ports; Beet Sugar Delivered to Principal Markets for Beet Sugar

(Cents per pound)

	1929	1930	1931	Simple average
A. Raw Sugar - Cuba vs. Louisiana -				
Louisiana sugar delivered at New Orleans	5.167	4.379	4.393	4.646
Cuban sugar delivered at Atlantic and Gulf Coast refineries	2.060	1.979	1.730	1.923
Excess of domestic cost	3.107	2.400	2.663	2.723
B. Sugar refined from Cuban raw sugar vs. beet sugar -				
Beet sugar delivered to principal markets as per table 38 - per pound of refined sugar	1/4.946	4.590	4.280	4.605
Cuban sugar refined in United States and Cuban sugar refined in Cuba f.o.b. refineries and c.i.f. domestic ports	2.819	2.718	2.423	2.653
Excess of domestic cost -				
Per pound of refined sugar requiring 1.07 pounds of raw cane sugar	2.127	1.872	1.857	1.952
Equivalent per pound of raw sugar	1.988	1.750	1.736	1.824
Weighted average excess of domestic cost per pound of raw sugar	2.173	1.836	1.735	1.915
Weights used in average, viz., total quantity (tons) of -				
A. Raw sugar produced in Louisiana	199,610	183,693	155,924	
B. Beet sugar produced in United States	1,009,919	1,204,771	1,148,243	

1/ Beet costs for 1929 were calculated by applying to the 1930 costs the indices of changes in labor rates, horse costs, and yields per acre. Data published by the Department of Agriculture were used as the basis for the indices.





Cost Comparison on Refined Sugar Basis

In computing the difference between domestic and Cuban costs in its relation to the determination of the duty on raw sugar, the Commission has deemed it appropriate, as already pointed out in the report, to adjust the comparison between beet sugar (itself a refined product) and Cuban cane sugar to the basis of 96 degree raw sugar, and to combine the cost difference thus ascertained with the cost differences between Louisiana and Hawaiian raw sugar and Cuban raw sugar. The President, the Congress, and the public may, however, be interested in a comparison expressed in terms of refined sugar, that is to say 100 degree sugar. This may be accomplished by converting the cost comparisons for Louisiana and Hawaiian sugar with Cuban sugar to a refined basis and combining the results with those derived directly from the comparison between beet sugar and sugar refined from Cuban raw sugar. For this purpose all that is necessary is to add the average cost of refining to the figures showing the cost of Louisiana and Hawaiian raw sugar delivered at refineries in the United States. The data for Cuban costs on a refined basis (cost of production of raw sugar plus cost of refining in the United States and in Cuba) have already been presented in the comparison with beet sugar.

It should be understood that this is not the basis of comparison of costs on a refined sugar basis used by the Commission for determining what should be the differential between the duty on raw sugar and the duty on refined sugar. For the purpose of determining that differential the Commission used the difference between the cost of sugar (including Cuban raw sugar) refined in the United States and the cost of sugar refined in Cuba.

Table 6 shows this comparison on a refined basis, using each of the three different methods above described for computing the costs of delivery of beet sugar and of sugar refined from Cuban raw sugar.

Table 6. - Domestic vs. Cuban sugar: Cost comparison with raw cane sugar converted to terms of refined sugar

	1929-30	1930-31	1931-32	Simple average 3 years
Louisiana vs. Cuban sugar -				
Louisiana sugar f.o.b. New Orleans, refined basis	6.101	5.256	5.267	5.541
Cuban sugar refined in United States and Cuba, f.o.b. U.S. refineries or c.i.f. U.S. ports	2.819	2.718	2.423	2.653
Excess of domestic cost	3.282	2.538	2.844	2.888
Hawaiian vs. Cuban sugar -				
Hawaiian sugar f.o.b. Pacific coast refineries in United States, refined basis	4.263	4.050	3.846	4.053
Cuban sugar refined in United States and Cuba, f.o.b. U.S. refineries or c.i.f. U.S. ports	2.819	2.718	2.423	2.653
Excess of domestic cost	1.444	1.332	1.423	1.400
Excess of domestic cost of beet sugar over cost of Cuban sugar refined in United States and Cuba, on the basis of different methods of computing delivery charges (see table 1)				
Method 1	1.510	1.498	1.510	1.506
Method 2	1.447	1.445	1.439	1.442
Method 3	1.874	1.872	1.858	1.868
Weighted average excess of costs of Louisiana, Hawaiian and beet sugar over cost of Cuban sugar, when the specified method of computing delivery costs is used in the beet-sugar comparison -				
Method 1	1.647	1.509	1.561	1.572
Method 2	1.617	1.482	1.524	1.541
Method 3	1.819	1.698	1.732	1.750

The costs for beet sugar in 1929-30 used in table 6 are those based on the assumption that the cost of producing sugar beets in 1929 was the same as in 1930. If the costs of production of sugar beets in 1929 be estimated in the manner above set forth, the excess of the cost of beet sugar over the sugar refined from Cuban raw sugar for 1929-30 becomes as shown in the first three lines of the first column of table 4. On the basis of Method 1 of computing delivery costs in the beet sugar comparison this change in respect to beet sugar costs would give as the weighted average excess of the cost of beet, Louisiana and Hawaiian sugar over the cost of Cuban sugar, on a refined basis, during 1929-30 the figure of 1.767 cents; Method 2 of computing these delivery costs gives 1.737 cents; and Method 3 gives 1.939 cents. For the 3-year period taken together this adjustment results under Method 1 in a weighted average excess of domestic over Cuban costs of 1.612 cents; under Method 2 the average excess is 1.581 cents; and under Method 3 it is 1.790 cents.

Costs on the Basis of Prices Paid for Purchased Sugar Beets and Sugar Cane

In connection with the presentation of the costs of production of sugar in the beet-sugar area, Louisiana, Hawaii, and Cuba, a supplemental statement was given showing costs in which purchased sugar beets and sugar cane were entered, not on the basis of the farm cost of producing them, but on the basis of the prices paid for them. Although it does not constitute a satisfactory basis for judgment concerning the appropriate duty on sugar, the calculation of the difference between the several domestic costs and the Cuban costs on this basis possesses a certain general public interest and is of tremendous importance to the sugar industry. Table 7 makes this comparison. In this table the delivery costs for beet sugar and for sugar refined from Cuban raw sugar are computed by one method only, namely Method 1. Different results would of course be secured by the application of the delivery costs according to Methods 2 and 3.

Table 7. - Comparison of domestic and Cuban delivered costs of sugar, on basis of cost of company-grown cane or beets plus price of purchased cane or beets

All raw sugar costs on basis of 96 degree sugar

(Cents per pound)

	1929	1930	1931	Simple average
A. Raw sugar - Cuba vs. Louisiana -				
Louisiana sugar delivered at New Orleans	4.457	3.992	4.081	4.177
Cuban sugar delivered at Atlantic and Gulf coast refineries	1.910	1.967	1.665	1.847
Excess of domestic cost	2.547	2.025	2.416	2.330
B. Raw sugar - Cuba vs. Hawaii -				
Hawaiian sugar delivered at refineries in United States	3.434	3.245	3.079	3.253
Cuban sugar delivered at Atlantic and Gulf coast refineries	1.910	1.967	1.665	1.847
Excess of domestic cost	1.524	1.278	1.414	1.406
C. Sugar refined from Cuban raw sugar vs. beet sugar -				
Beet sugar delivered to all markets supplied by it - per pound refined sugar	5.216	5.141	4.294	4.884
Cuban sugar refined in United States and in Cuba, delivered to all markets supplied by it - per pound refined sugar	2.926	2.967	2.618	2.837
Excess of domestic cost - Per pound of refined sugar requiring 1.07 lbs. of raw cane suar	2.290	2.174	1.676	2.047
Equivalent per pound of raw sugar	2.140	2.032	1.566	1.913
Weighted average excess of domestic costs per pound of raw sugar	1.911	1.716	1.559	1.729
Weights used in average, viz. total quantity (tons) of -				
A. Raw sugar produced in Louisiana	199,610	183,693	155,924	-
B. Raw sugar produced in Hawaii	924,998	996,289	1,025,352	-
C. Beet sugar produced in United States	1,009,919	1,204,771	1,148,243	-

It will be seen from this table that the weighted average excess of domestic costs for beet sugar, Louisiana sugar, and Hawaiian sugar over Cuban costs, all calculated on the basis of the cost of company-grown cane and the price paid for purchased cane or beets, amounted to 1.91 cents per pound in 1929, 1.72 in 1930, and 1.56 cents in 1931, the simple average excess of costs for the three years being 1.73 cents. This figure compares with 1.495 cents, the cost difference found where all cane and beets were taken on the basis of the farm cost of production without regard to the price paid for that part of the material which was purchased.

Respectfully submitted,

E. B. Brossard

Commissioner Edgar B. Brossard

UNITED STATES TARIFF COMMISSION
Washington

S U G A R

REPORT

of the

UNITED STATES TARIFF COMMISSION

to the

PRESIDENT OF THE UNITED STATES

SECTION II. SUMMARY OF INFORMATION OBTAINED IN THE INVESTIGATION

Under the Provisions
of Sections 332 and 336
of the
Tariff Act of 1930

SUMMARY OF INFORMATION OBTAINED IN THE INVESTIGATION WITH RESPECT TO SUGAR

Scope of the Report

The present report deals with the rates of duty on sugar of all degrees of polariscopic test, including raw sugar and refined sugar. It is divided into four parts. The first part undertakes to determine by cost comparison under section 336 of the Tariff Act of 1930 the proper rate of duty on sugar generally; it deals primarily with raw sugar but, under the system of sugar duties graduated according to polariscopic test as provided by law, the results affect also the rates on refined sugar. The second part of the report deals with refined sugar as such, that is to say, the relation between the rates on raw sugar and the rates on the refined product. The third part of the report deals with the cost of sugar in Puerto Rico and the Philippines, and part IV shows a comparison of costs in the United States with all of the areas supplying that market, that is, Cuba and the several insular areas including Hawaii, Puerto Rico and the Philippine Islands.

History of the Investigation

On June 10, 1931, the Tariff Commission received an application from various organizations of sugar-beet growers for an investigation of sugar duties generally. The applicants declared that they believed the existing rates to be less than necessary to equalize the difference in cost of production. On July 7, 1931, the Tariff Commission received an application from domestic refiners of cane sugar and producers of beet sugar for an investigation of sugars polarizing 98 sugar degrees or advanced in value or condition beyond the raw state - that is to say, in substance, for an investigation of refined sugar. The applicants alleged that the present differential in duty between raw and refined sugar was inadequate to cover the difference between domestic and foreign costs of refining including the loss of raw sugar in the refining process. An investigation on the basis of these applications was ordered by the Commission on September 14, 1931. The investigation as

ordered by the Commission related to all products specified in paragraphs 501 and 502 of the Tariff Act of 1930, namely sugars, molasses and related products, but it was found impracticable to make an adequate cost comparison with respect to molasses and sugar sirups covered by paragraph 502 and the present report relates only to sugar as such.

In this report quantities are expressed in short tons of 2000 pounds unless otherwise stated.

PART I - RAW SUGAR

Rates of Duty

Under all recent tariff acts duties on sugar have been fixed by naming a basic rate applicable to sugars testing 75 degrees or less by the polariscope and fixing a differential to be added for each sugar degree up to 100 degrees, the only exception being that under the act of 1909 this differential did not apply above 98 degrees, a special rate being fixed on sugar of 99 and 100 degrees.

The most important grade of sugar imported into the United States is that testing 96 degrees. This grade is the basis of standard price quotations. Consequently, in this report the rate of duty on 96 degree sugar, as determined by adding to the basic rate the differential for additional degrees, is frequently referred to as the rate of duty on raw sugar. All sugar of 100 degrees is refined sugar, but some refined sugar tests lower. There is no definite point, as regards polariscope test, at which refined sugar is segregated from raw sugar.

Table 1 shows for each tariff act since 1909 the basic rate of duty on 75 degree sugar, the differential for each additional sugar degree, the rate on 96 degree sugar and the rate on 100 degree sugar. As already

stated, the rate on 99 and 100 degree sugar under the act of 1909 was a special rate not determined by adding the differential. The table also shows the rates applicable on imports from Cuba, which at all times since 1903 has enjoyed a preferential reduction of 20 percent from the full duty.

Table 1. - Rates of duty on sugar

(Cents per pound)

Act of-	Basic rate on sugar not over 75 degrees		Additional rate for each higher degree		Rate on 96 degree sugar		Rate on 100 degree sugar	
	General rate	Cuban rate	General rate	Cuban rate	General rate	Cuban rate	General rate	Cuban rate
1909 -	.9500	.760	.0350	.0280	1.6850	1.3480	1.900	1.520
1913 -	.7100	.568	.0260	.0208	1.2560	1.0048	1.360	1.088
1921 -	1.1600	.928	.0400	.0320	2.0000	1.6000	2.160	1.728
1922 -	1.2400	.992	.0460	.0368	2.2060	1.7648	2.390	1.912
1930 -	1.7125	1.370	.0375	.0300	2.5000	2.0000	2.650	2.120

Ad valorem equivalent of sugar duty

The ad valorem equivalent of the sugar duty has varied greatly from time to time not merely by reason of changes in the rates provided by law but, still more, by reason of changes in the average price of sugar. Table 2 shows with respect to sugar imported from Cuba (from which country during all recent years the great bulk of the dutiable imports of sugar has come) the average ad valorem equivalent of the duty on 96 degree sugar. Table 3 shows the average duty per pound and the ad valorem equivalent on imports of all raw and refined sugar from Cuba. The ad valorem equivalent for the duty on 96 degree sugar varies only with the rate of duty per pound fixed in the statute and the price, whereas the average for all sugar imported is affected both by these factors and by changes in the relative proportion of sugar of different degrees in the imports. During the last few years there has been an increase in the proportion of imports from Cuba consisting of refined sugar, of 99 or 100 degrees, and this has affected the average ad valorem equivalents. It will be noted that down to 1927 the duty per pound on sugar of all degrees imported from Cuba averaged appreciably lower than the duty per pound on 96 degree sugar; in other words the average test of the sugar was appreciably below 96 degrees. After 1929 the average duty on all sugar at most times has been somewhat higher than that on 96 degree sugar; indicating that the average test has been above 96 degrees.

Table 2. - Average ad valorem equivalent of the duty on 96 degree raw sugar imported from Cuba

Note. Averages for years (except 1930) during which the rate of duty was changed are omitted

Year	Duty per pound	Dutiable value per pound	Rate of duty on value	Year	Duty per pound	Dutiable value per pound	Rate of duty on value
	Cents	Cents	Percent		Cents	Cents	Percent
Act of 1909 - Years ended June 30				Act of 1921 - May 28, 1921 - Sept. 21, 1922	1.60	2.50	64.1
1911	1.348	2.53	53.3	Act of 1922 - Calendar years			
1912	do.	2.86	47.1				
1913	do.	2.23	60.5				
				1923	1.7648	4.84	36.5
Act of 1913 - Years ended June 30				1924	do.	4.29	41.1
				1925	do.	2.55	69.1
				1926	do.	2.29	77.2
				1927	do.	2.78	63.4
1915	1.0048	2.99	33.6	1928	do.	2.39	74.7
1916	do.	3.67	27.4	1929	do.	1.83	96.6
1917	do.	4.39	22.9	Jan.1-June 17, 1930	do.	1.70	103.6
1918	do.	4.84	20.8				
Calendar years				Act of 1930 - June 18-Dec.31, 1930	2.00	1.14	175.2
1919	do.	5.61	17.9	1931	do.	1.23	162.8
1920	do.	11.53	8.7	1932	do.	.90	223.1
				Jan.-Aug., 1933	do.	1.04	192.2

Table 3. - Average ad valorem equivalent of the duty on all sugar imported from Cuba

Note. The variations in average unit value, and consequently in the average rate of duty on value under a given tariff act, are chiefly due to price fluctuations, but partly to changes in the proportions of sugar of different degrees making up the total. These changes -- chiefly an increased proportion of 100 degree (refined) sugar in recent years, may be judged approximately from the relation between the average duty, in cents per pound, on all the imported sugar, and the rates applicable to 96 degree sugar, namely 1919 and 1920, 1.0048 cents, 1921-22, 1.60 cents, 1923-1929, 1.7648 cents, and since June 18, 1930, 2.00 cents.

Year	Sugar, of all degrees, imported from Cuba: Average duty per pound	Average dutiable value per pound	Average rate of duty on value
	Cents	Cents	Percent
Act of 1913 -			
1919	.995	5.59	17.8
1920	.995	11.63	8.6
Act of 1921 -			
May 28, 1921 - Sept. 21, 1922	1.588	2.47	64.4
Act of 1922 -			
1923	1.752	4.86	36.1
1924	1.751	4.27	41.0
1925	1.752	2.56	68.6
1926	1.754	2.32	75.5
1927	1.755	2.84	61.7
1928	1.760	2.42	72.6
1929	1.764	1.88	93.6
Jan. 1 - June 17, 1930	1.772	1.79	98.9
Act of 1930 -			
June 18 - Dec. 31, 1930	2.000	1.22	163.2
1931	2.012	1.32	152.3
1932	2.026	1.05	193.2
Jan. - Aug., 1933	2.043	1.15	177.5

Table 2 shows that during the first full calendar year of the Tariff Act of 1922, under which the rate of duty on 96 degree Cuban sugar was 1.7648 cents per pound, the average unit value of the imports of such sugar was 4.84 cents per pound, so that the duty was equivalent to 36.5 percent ad valorem. In 1929, the last full year when this duty was in effect, the average unit value of the 96 degree sugar was 1.83 cents and the duty was equivalent to 96.6 percent ad valorem. The table also shows that by reason of the decline in the price of sugar the ad valorem equivalent of the 2-cent rate on 96 degree sugar was materially higher in 1932 and 1933 than in 1931; for the period January-August 1933, it averaged 192.2 percent.

The relative quantities, by polariscopic test, of the imports of sugar from Cuba during recent years are shown in table 19 of the appendix.

Sources of Sugar Supply of Continental United States

The sugar consumed in continental United States may be classed under three heads: (1) Sugar produced in continental United States (beet and cane); (2) sugar produced in the insular areas ofthe United States (cane); and (3) sugar produced in foreign countries (cane). All sugar produced in the insular areas is brought in free of duty (this has been the case with respect to Hawaiian sugar since 1875, Puerto Rican sugar since 1901, and Philippine sugar since 1909). Table 4 shows, in tons, the amount supplied from these sources; it distinguishes the principal individual insular areas (Hawaii, Puerto Rico, and the Philippine Islands) and also distinguishes imports from Cuba and from other foreign countries. Table 5 shows the corresponding percentages. The most conspicuous changes

shown during recent years are the decline, both absolute and relative, in the quantity supplied by Cuba and the increase, both absolute and relative, in the quantity supplied by insular areas.

As shown in table 44 of part II the greater part of the sugar brought in both from insular areas and from Cuba is raw sugar which is refined in continental United States. Of the refined sugar consumed in continental United States in 1932, 88 percent was refined there, 3.3 percent in insular areas, and 8.7 percent in foreign countries, principally in Cuba.

Table 4. - Sources of sugar supply of Continental United States, refined and/or consumption basis - quantities

Periods are arranged so as to distinguish, roughly, conditions under the different tariff acts of 1897, 1909, 1913, 1922, and 1930

(In thousands of short tons)

Period or year	Total all sources 1/	Continental United States		Insular areas of United States				Foreign countries	
		Cane	Beet	Total 2/	Hawaii	Puerto Rico	Philippines	Cuba	Other
				(Annual average supply)					
1897-1901	2,407	267	77	357	289	50	18	401	1,287
1902-1906	2,997	339	244	546	385	136	25	1,139	702
1907-1911	3,615	378	508	863	514	267	82	1,508	339
1912-1913	4,058	260	640	1,022	578	345	99	2,047	69
1914-1916	4,190	222	782	1,073	580	361	132	2,063	31
1917-1921	4,354	222	803	1,039	540	394	98	2,117	149
1922-1926	5,804	171	959	1,337	601	418	313	3,262	72
1927-1930	6,230	133	1,015	1,981	775	588	612	3,078	21
1931-1932	5,986	171	1,243	2,576	931	775	867	1,964	31
				(Yearly supply)					
1921	4,600	306	1,061	1,112	540	419	147	2,090	30
1922	5,704	306	1,005	1,111	517	349	240	3,237	42
1923	5,354	241	986	1,020	515	281	222	2,966	139
1924	5,437	91	834	1,249	567	383	297	3,163	97
1925	6,171	140	994	1,740	713	564	453	3,258	38
1926	6,352	79	978	1,563	692	515	350	3,686	45
1927	5,933	43	874	1,745	712	540	487	3,262	6
1928	6,208	130	1,162	1,962	766	653	533	2,920	33
1929	6,508	176	959	1,979	868	430	677	3,376	16
1930	6,271	184	1,066	2,240	753	729	752	2,753	29
1931	6,132	192	1,255	2,366	904	699	762	2,281	37
1932	5,840	150	1,232	2,786	957	851	974	1,647	25

1/ Includes a small "miscellaneous" item during years preceding 1930; maximum of this item, in 1919, was 38 thousand tons.

2/ Includes after 1916 a small amount from Virgin Islands, 4 thousand tons in 1932.

Source: Basic data from Willett & Gray.

Table 5. - Sources of sugar supply of Continental United States, refined and/or consumption basis - percentages

Periods are arranged so as to distinguish, roughly, conditions under the different tariff acts of 1897, 1909, 1913, 1922, and 1930

(In percentages of total)

Period or year	Total all sources 1/	Continental United States		Insular areas of United States				Foreign countries	
		Cane	Beet	Total 2/	Hawaii	Puerto Rico	Philippines	Cuba	Other
				(Annual average supply)					
1897-1901	100	11.1	3.2	14.6	12.0	2.1	.7	16.7	53.6
1902-1906	100	11.3	8.1	18.2	12.8	4.5	.8	38.0	23.4
1907-1911	100	10.5	14.1	23.9	14.2	7.4	2.3	41.7	9.4
1912-1913	100	6.4	15.8	25.2	14.2	8.5	2.4	50.4	1.7
1914-1916	100	5.3	18.7	25.6	13.8	8.6	3.2	49.2	.7
1917-1921	100	5.1	18.4	23.9	12.4	9.0	2.3	48.6	3.4
1922-1926	100	2.9	16.5	23.0	10.4	7.2	5.4	56.2	1.2
1927-1930	100	2.1	16.3	31.8	12.4	9.4	9.8	49.4	.3
1931-1932	100	2.9	20.8	43.0	15.6	12.9	14.5	32.8	.5
				(Yearly supply)					
1921 -----	100	6.7	23.1	24.2	11.7	9.1	3.2	45.4	.7
1922 -----	100	5.4	17.6	19.5	9.1	6.1	4.2	56.7	.7
1923 -----	100	4.5	18.4	19.1	9.6	5.2	4.1	55.4	2.6
1924 -----	100	1.7	15.3	23.0	10.4	7.0	5.5	58.2	1.8
1925 -----	100	2.3	16.1	28.2	11.6	9.1	7.3	52.8	.6
1926 -----	100	1.2	15.4	24.6	10.9	8.1	5.5	58.0	.7
1927 -----	100	.7	14.7	29.4	12.0	9.1	8.2	55.0	.1
1928 -----	100	2.1	18.7	31.6	12.3	10.5	8.6	47.0	.5
1929 -----	100	2.7	14.7	30.4	13.3	6.6	10.4	51.9	.2
1930 -----	100	2.9	17.0	35.7	12.0	11.6	12.0	43.9	.5
1931 -----	100	3.1	20.5	38.6	14.7	11.4	12.4	37.2	.6
1932 -----	100	2.6	21.1	47.7	16.4	14.6	16.6	28.2	.4

1/ Includes a small "miscellaneous" item during years preceding 1930; maximum of this item, in 1919, was 38 thousand tons.

2/ Includes after 1916 a small amount from Virgin Islands, 4 thousand tons in 1932.

Sugar production in continental United States

The sugar production of continental United States consists of cane sugar and beet sugar. Until recently practically all the cane sugar was produced in Louisiana and the statistics in table 4, showing the total consumption in continental United States of cane sugar produced in continental United States, represent substantially the production of Louisiana cane sugar, although in 1932 the production in Florida reached 36,000 tons. On account of the large importance of the beet-sugar industry, additional statistical information may be presented regarding that branch of domestic production. Table 6 shows for continental United States as a whole the acreage, production, and price per ton of sugar beets and the production of beet sugar. The changes in beet sugar production have naturally been closely parallel with those in the production of sugar beets, although on account of some upward trend in the percentage of sugar extracted from the beets there has been a greater increase in output of sugar than of beets.

Table 6. - Sugar beet and beet sugar production in continental United States

Period or year	Acres harvested	Production of beets	Average price per ton	Sugar made
		1,000 tons		1,000 tons
		(Annual average)		
1901-5	228,000	2,079	$4.89	240
1906-10	386,000	3,910	1/ 5.18	479
1911-15	541,000	5,738	5.63	724
1916-20	698,000	6,623	9.38	832
1921-25	693,000	6,968	7.53	916
1926-30	701,000	7,718	7.32	1,055
		(Annual figures)		
1923	657,000	7,006	8.99	881
1924	815,000	7,489	7.99	1,090
1925	647,000	7,381	6.39	913
1926	677,000	7,223	7.61	897
1927	721,000	7,753	7.67	1,093
1928	644,000	7,101	7.11	1,061
1929	688,000	7,315	7.08	1,018
1930	775,000	9,199	7.14	1,208
1931	713,000	7,903	5.94	1,156
1932	764,000	9,070	5.10	1,357

Source: U. S. Dept. of Agriculture.
1/ Four-year average.

Table 7 shows the acreage and production of sugar beets and the production of beet sugar in the individual States. It will be seen that the great bulk of the production is in the Rocky Mountain States and in California. The production in Nebraska is in the western part of that State and is under conditions similar to those prevailing in Colorado.

Table 7. - Acreage and production of sugar beets and production of sugar, by states

Acreage in thousands, beet production and sugar production in thousands of short tons

	California	Colorado	Idaho	Montana	Utah	Wyoming	Nebraska	Michigan	Ohio	Wisconsin
Acreage harvested:										
1928	49	179	27	28	51	44	86	71	38	8
1929	46	210	48	38	45	47	92	52	20	8
1930	65	242	44	45	44	46	81	74	31	12
1931	89	224	33	54	49	49	65	58	1/	1/
1932	104	156	53	54	56	40	66	122	26	1/
1933 2/	105	217	77	64	72	53	81	155	41	1/
Beets produced										
1928	638	2,394	297	258	637	462	1,021	452	266	74
1929	545	2,612	492	386	565	487	1,054	300	174	56
1930	768	3,312	446	572	553	646	1,136	513	286	102
1931	1,060	2,532	301	617	505	552	891	581	1/	1/
1932	1,288	1,777	709	739	846	506	877	1,215	259	1/
1933 2/	1,365	2,756	1,001	768	900	689	1,069	1,240	390	1/
Sugar made										
1928	103	384	53	44	90	59	146	64	31	12
1929	91	348	79	54	77	66	140	57	17	10
1930	124	407	66	75	78	94	136	86	33	15
1931	166	370	46	92	77	85	126	83	1/	1/
1932	213	277	108	108	128	85	113	171	42	1/
1933 3/										

1/ Not separately shown.
2/ Preliminary.
3/ Not yet available.

Source: U. S. Department of Agriculture.

Sugar production in the insular areas of the United States

The great bulk of the sugar produced in Hawaii, Puerto Rico, and the Philippine Islands is shipped to continental United States where it enjoys the benefit of entry free of duty. Most of the remainder is consumed in those insular areas themselves, the exports to foreign countries being insignificant and only from the Philippines. Table 8 shows the production (by crop years) in each of these three major insular areas in comparison with the receipts (by calendar years) in continental United States of sugar produced in them, respectively. The receipts during a given calendar year are not precisely comparable, in point of time with the production of that season, a circumstance which explains the fact that the receipts from Hawaii in 1922 were greater than the production of that year in Hawaii. The table also gives combined totals for these three insular areas together with the small quantities produced in and received from the Virgin Islands.

It will be seen that in 1932 the total production of sugar in the insular areas of the United States was 3,123,000 tons, whereas the receipts of insular sugar in continental United States were 2,960,000 tons, equal to 94.8 percent of the production. The proportion shipped to continental United States is normally highest for Hawaii and lowest for the Philippines.

Table 8. - Production of sugar in insular areas of United States and proportion shipped to continental United States

(Quantities in thousands of short tons of raw sugar)

Year	All U.S. Insular areas 1/			Hawaii		Puerto Rico		Philippines	
	Production	Receipts in Cont.U.S.	Proportion received	Production	Receipts in Cont.U.S.	Production	Receipts in Cont.U.S.	Production	Receipts in Cont.U.S.
			Percent						
1919	1,237	1,042	84.2	602	579	406	364	219	88
1920	1,304	1,122	86.0	569	550	486	413	234	146
1921	1,347	1,182	87.8	565	541	491	469	287	165
1922	1,353	1,209	89.4	562	568	406	360	379	275
1923	1,213	1,101	90.8	537	519	379	342	295	238
1924	1,569	1,411	89.9	701	677	448	393	417	339
1925	2,095	1,859	88.7	776	755	661	600	651	493
1926	1,892	1,693	89.5	790	747	606	559	489	380
4-year ave	1,692	1,516	89.6	701	674	524	474	463	362
1927	2,104	1,887	89.7	811	777	630	574	654	531
1928	2,365	2,139	90.4	904	878	751	674	697	575
1929	2,374	2,104	88.6	946	882	594	507	830	711
1930	2,664	2,475	92.9	925	866	866	809	867	794
4-year ave	2,377	2,151	90.4	896	851	710	641	762	653
1931	2,662	2,545	95.6	996	968	788	758	876	818
1932	3,123	2,960	94.8	1,025	1,021	992	894	1,101	1,040

1/ Includes small quantities for Virgin Islands.

Sugar production in Cuba

As more fully appears from tables 4 and 10, very nearly the entire importation of sugar from foreign countries during recent years has come from Cuba. The only foreign country, therefore, whose statistics are of special significance for the purposes of the present investigation is Cuba. Table 9 shows the total reported production of sugar in Cuba in comparison with the receipts of Cuban sugar in continental United States. The figures of production and receipts for any one year are not closely comparable with one another because of over-lapping time. The averages for a group of years are more significant. The table shows that on the average for the four years 1923-26 the receipts of Cuban sugar in continental United States were equal to 76.5 percent of the reported production of that island. The corresponding proportion for the 4-year period 1927-30 was 66.6 percent. This decline in the proportion shipped to the United States has been accompanied by an increase, both relative and absolute, in exports of Cuban sugar to countries other than the United States, as appears from the Cuban statistics which are also included in the table. According to the Cuban statistics, exports to the United States during the period 1923-26 represented about 82 percent of total exports, whereas the corresponding proportion for the four years 1927-30 was 76 percent and for 1932, 65 percent.

Table 9. - Production of sugar in Cuba compared with receipts of Cuban sugar in continental United States; together with Cuban sugar export statistics. 1/

(Quantities in thousands of short tons)

	Production in Cuba	Receipts in continental U.S. from Cuba (U.S. statistics)	Ratio of such receipts to production	Cuban export statistics 2/		
				To United States	To other countries	Proportion to U. S.
			Percent			Percent
1919	4,448	3,336	75.0	3,539	948	78.9
1920	4,178	2,870	68.7	2,651	839	76.0
1921	4,408	2,531	57.4	2,653	546	82.9
1922	4,476	4,526	101.1	4,448	1,115	80.0
1923	4,035	3,402	84.3	3,468	404	89.6
1924	4,555	3,719	81.6	3,817	620	86.0
1925	5,741	3,902	68.0	4,104	1,418	74.3
1926	5,471	4,121	75.3	4,328	972	81.7
4-year average	4,950	3,786	76.5	3,929	854	82.1
1927	5,045	3,691	73.2	3,785	925	80.4
1928	4,493	3,299	73.4	3,303	1,148	74.2
1929	5,775	3,650	63.2	4,320	1,224	77.9
1930	5,252	3,040	58.1	2,550	1,099	69.9
4-year average	5,136	3,420	66.6	3,490	1,099	76.0
1931	3,497	2,409	68.9	2,376	669	78.0
1932	2,915	1,807	62.0	1,908	1,023	65.1

1/ Production statistics are for raw sugar; other data include both raw and refined.

2/ Excluding small quantities of refined sugar for the period 1919-24, inclusive, in some years production, and consequently exports, have been restricted by action of the Cuban government.

Imports of Dutiable Sugar

The most important facts with regard to the imports of dutiable sugar - namely, the quantities imported from Cuba and from countries paying full duty, respectively, in comparison with the quantities supplied to the continental United States by domestic production and by the insular areas of the United States - have already been presented in Table 4 of this report. Certain additional data concerning dutiable imports may be given here.

In the official statistics of foreign trade compiled by the Department of Commerce the Philippine Islands and Virgin Islands are treated as if they were foreign countries, whereas Hawaii and Puerto Rico, being themselves part of the customs area of the United States, do not appear in the foreign trade statistics. The official reports show the imports of dutiable sugar and of free sugar as two separate items, the latter representing receipts from the Philippine Islands and the Virgin Islands. The present section of this report deals only with the imports of dutiable sugar.

Table 10 shows the total imports of dutiable sugar in quantity and value and the amount of duty thereon. It also shows separate data regarding imports from Cuba and from countries paying full duty. Most of the full duty sugar is re-exported in other forms (canned fruits, etc.) with drawback of the duty.

Table 10.- Sugar: United States imports of cane and beet sugar (dutiable)

Period	Total dutiable			From Cuba				From countries paying full duty			
	Imports		Duty (computed)	Imports		Duty (computed)		Imports		Duty (computed)	
	Quantity	Value		Quantity	Value	Average ad valorem	Average	Quantity	Value	Average ad valorem	Average
	Thous. tons	Thous. dollars	Thous. dollars	Thous. tons	Thous. dollars	Percent	Cents per lb.	Thous. tons	Thous. dollars	Percent	Cents per lb.
Fiscal years											
1910	1,949	99,938	53,738	1,734	90,952	50.1	1.315	235	8,986	79.3	1.655
1911	1,949	96,482	52,446	1,805	89,826	53.0	1.318	148	6,656	72.7	1.682
1912	1,855	104,105	50,535	1,614	91,139	46.7	1.318	240	12,966	61.4	1.657
1913	1,985	89,716	53,086	1,873	84,456	58.5	1.320	114	5,259	69.3	1.623
1914 (July 1,1913-Feb.28,1914)	1,363	55,499	36,147	1,358	55,285	65.1	1.324	5	214	74.4	1.638
(March 1 - June 30)	1,281	50,368	25,293	1,276	50,133	50.2	.986	4	235	47.7	1.219
1915	2,466	155,095	49,244	2,336	146,495	31.4	.986	130	8,600	37.0	1.219
1916	2,741	200,968	55,275	2,600	190,407	27.2	.996	141	10,562	42.2	1.579
1917	2,648	231,468	53,971	2,395	209,166	23.8	.995	253	22,302	28.2	1.241
1918	2,373	229,724	47,781	2,261	218,492	20.6	.994	112	11,232	25.1	1.248
Calendar years											
1919	3,396	381,349	67,909	3,336	373,012	17.8	.995	60	8,337	18.1	1.250
1920	3,710	918,886	78,663	2,870	667,919	8.5	.995	840	250,968	8.6	1.282
1921 (Jan.1-May 27)	1,629	165,430	[illegible]	1,437	133,726	21.4	.995	191	31,714	15.4	1.278
(May 28-Dec. 31)	1,158	65,194	[illegible]	1,093	61,442	56.5	1.587	65	3,752	69.9	2.002
1922 (Jan. 1-Sept. 21)	3,956	188,713	125,958	3,931	186,510	67.0	1.589	25	2,202	47.6	2.078
(Sept.22-Dec. 31)	612	41,605	21,486	595	40,337	51.6	1.748	17	1,267	53.0	1.916
1923	3,588	348,755	127,475	3,401	330,392	36.1	1.752	187	18,363	45.2	2.216
1924	3,828	327,098	135,099	3,718	317,519	41.0	1.751	109	9,011	53.8	2.208
1925	3,929	201,236	138,011	3,901	199,433	68.6	1.752	27	1,803	62.5	2.279
1926	4,140	192,744	145,428	4,120	191,431	75.5	1.754	19	1,313	68.9	2.292
1927	3,700	210,677	130,044	3,690	210,011	61.7	1.755	10	666	69.0	2.292
1928	3,321	161,272	117,154	3,299	159,937	72.6	1.760	22	1,335	79.0	2.343
1929	3,666	138,282	129,526	3,650	137,609	93.6	1.764	16	673	110.9	2.277
1930 (Jan.1-June 17)	1,945	69,745	69,377	1,897	68,007	98.9	1.772	47	1,738	123.6	2.256
(June 18-Dec. 31)	1,144	28,050	45,766	1,142	28,006	163.2	2.000	1	44	127.0	2.565
1931	2,439	64,560	98,455	2,408	63,642	152.3	2.012	30	918	167.9	2.505
1932	1,826	38,464	74,213	1,806	37,897	193.2	2.026	20	567	178.3	2.518

Source: Foreign Commerce and Navigation of the United States.

The maximum quantity of dutiable sugar imported was in 1926 when 4,140,000 tons were brought in. The value of dutiable sugar imported in 1920, however, was far greater than in any other year on account of the abnormally high price, and during that year 840,000 tons came from countries other than Cuba. Since 1926 dutiable imports have been much smaller; in 1932 they amounted to 1,826,000 tons. The value of imports fell from $193,000,000 in 1926 to $38,000,000 in 1932, the unit value having declined sharply. The amount of duty collected was larger in 1926 than in any other year, amounting to $145,000,000; in 1932 it was $74,000,000.

In most years covered by the table the great bulk of the dutiable imports have come from Cuba under the preferential duty enjoyed by that country. The only year in which dutiable imports from other foreign countries were considerable was 1920. In 1923, the last year in which imports from countries other than Cuba were valued at more than $10,000,000, the principal countries supplying the sugar were in the order of rank (as measured by quantity), Peru, Dominican Republic, Brazil, Mexico, United Kingdom (refined sugar), Guatemala, Nicaragua, Salvador, Dutch West Indies, and Honduras. There were in that year no imports of beet sugar, large quantities of which are produced in a number of European countries. The imports from the Dutch East Indies, which are an important producer of cane sugar, were small, the output of that country going chiefly to other Asiatic countries and to Europe.

In 1932 Cuba supplied nearly 99 percent of the total imports of dutiable sugar. Of the quantity from other countries, amounting to about 20,000 tons, Mexico supplied about 17,000 tons and the Dominican Republic most of the remainder. The imports of beet sugar in that year amounted to only about 550 tons.

The rate of duty on sugar of any given grade for countries paying full duty has during all years covered by the table been precisely 25 percent higher than the corresponding rate on imports from Cuba. On the basis of the total sugar actually imported the difference between the average rates of duty per pound on Cuban sugar and on other sugar in certain years departs considerably from this ratio because of the difference in the relative proportions of the different grades. There are more marked departures from this ratio in the case of the average ad valorem equivalent of the duties, attributable to the differences in average unit value of the respective classes of imports, which in turn are often due to disparity with respect to difference in price prevailing at the time of the year at which the imports come in.

Imports by sugar degrees

Although the tariff provides, by the system of differentials, a separate rate of duty for each degree from 75 to 100 degrees, the total imports of sugar of less than 95 degree test are insignificant. The bulk of the raw sugar imported is of either 95, 96, or 97 degrees, in addition to which there are imports of 100 degree sugar, all of which is refined, and of 99 degree sugar, a considerable part of which is refined, together with a small quantity of 98 degree sugar. On the average for the 10-year period 1923-1932 the annual imports of sugar below 95 degrees amounted to 10,129 tons, of sugar of 95 degrees 1,192,432 tons, 96 degrees 1,787,554 tons, 97 degrees 155,466 tons,

98 degrees 19,272 tons, 99 degeees 20,233 tons, and 100 degrees 168,162 tons. Further details regarding the imports by sugar degrees are given in the part of this report dealing with refined sugar.

Imports of Sugar and Receipts of Hawaiian Sugar, by Customs Districts

Table 11 shows the receipts of dutiable sugar (principally from Cuba), of Philippine and Virgin Island sugar (treated as imports in the official statistics of the Department of Commerce but free of duty), and of Hawaiian sugar (not treated as imports) at the ports of the principal customs districts. All these statistics are from the official reports of the Department of Commerce. There are no similar official statistics of the receipts in the several districts of sugar from Puerto Rico.

The table shows that New York is much the most important customs district as regards total receipts of sugar from these sources. It dominates in the receipts of Cuban sugar and is important also with respect to Philippine and Hawaiian sugar. The Philadelphia district, however, receives more Philippine sugar than any other district and the San Francisco district receives much more Hawaiian sugar than New York, very little sugar from Hawaii entering any other port. Of the combined total for foreign, Philippine and Hawaiian sugar in 1932, New York received 33 percent, San Francisco 17½ percent, and Philadelphia 14½ percent, these ports being followed by New Orleans, Maryland (Baltimore), Massachusetts (Boston), Georgia (Savannah), and Galveston.

The data in this table are used as one of the bases for the determination of the principal markets in the United States in connection with the comparison of delivered costs of the domestic and Cuban sugar.

Table 11.-- Receipts of sugar from foreign countries, Philippine Islands and Hawaii at principal customs districts of the United States

(In thousands of short tons)

Source	Total	New York	Philadelphia	Massachusetts	Maryland	Georgia	New Orleans	Galveston	San Francisco	All other
Dutiable cane sugar -										
1929	4,174	1,762	674	333	139	192	678	207	32	157
1930	2,695	909	424	258	183	131	381	156	38	215
1931	2,354	775	293	258	203	123	386	152	25	139
1932	1,926	670	165	204	209	103	269	80	7	219
Philippines and Virgin Islands -										
1929	714	160	232	-	235	-	27	-	46	14
1930	800	206	270	21	157	-	70	-	51	22
1931	819	261	278	26	113	-	63	3	46	29
1932	1,045	306	416	49	66	41	68	3	43	53
Hawaii -										
1929	882	58	4	-	-	-	-	-	805	15
1930	866	93	-	-	-	-	-	-	751	22
1931	968	146	-	-	-	-	-	-	810	12
1932	1,021	334	1	9	-	-	-	-	652	25
Total above -										
1929	5,770	1,980	910	333	374	192	705	207	883	186
1930	4,361	1,208	697	279	340	131	451	156	840	259
1931	4,141	1,182	571	284	316	123	449	155	881	180
1932	3,992	1,310	582	262	275	144	337	83	702	297

Source: United States Department of Commerce.

Exports

There are no exports of raw sugar from continental United States or from Hawaii or Puerto Rico. The exports of raw sugar from the Philippine Islands are insignificant. Continental United States was a considerable exporter of refined sugar but immediately following 1922 when exports reached a peak of 918,361 tons, there was a marked drop in exports to 222,458 tons in 1923 following which there has been a steady decline in exports except for the year 1925. Exports in 1932 amounted to only 49,004 tons. The encouragement of beet sugar production in other countries and tariff policies in foreign countries have been important factors in the decrease in our export trade. The statistics regarding exports of refined sugar are shown in the appendix of this report.

Prices of Raw Sugar

The price of raw sugar is ordinarily quoted for 96 degree sugar and the payment for raw sugar testing above or below that figure is ordinarily made on the basis of the 96 degree price with a percentage adjustment. Table 12 shows the average annual (semi-annual since 1930) prices of 96 degree sugar at New York ex-duty, together with the same prices plus the rate of duty prevailing at the time. For years in which the tariff was changed the periods before and after the date of enactment are distinguished. The prices ex-duty represent substantially the amount received by Cuban producers f.o.b. sugar mill plus transportation to New York, (inland charges in Cuba and ocean rates). The transportation item has amounted in most years to about 25 cents per 100 pounds. The prices duty-paid represent substantially the amounts received by producers of raw sugar in Louisiana, Puerto Rico, Hawaii, and the Philippine Islands, plus transportation to New York. Naturally the duty-paid prices show much less marked percentage fluctuations than the prices ex-duty. This fact is brought out clearly by the comparison of the two columns of relative numbers.

Table 13 shows the prices by months for recent years.

Table 12. - Price of 96° raw sugar at New York, excluding and including duty

	Duty on Cuban sugar	Price of Cuban sugar: cents per pound		Relative to 1921-25 as 100	
	cents per pound	Ex-duty	Duty-paid	Ex-duty 1921-25 = 3.68	Duty-paid 1921-25 = 5.34
1913	1.0048	2.16	3.16	59	59
1914	Do.	2.87	3.87	78	72
1915	Do.	3.63	4.63	99	87
1916	Do.	4.76	5.76	129	108
1917	Do.	5.34	6.34	145	119
1918	Do.	1/ 5.00	1/ 6.00	136	112
1919 - Jan.-Nov.	Do.	1/ 5.88	1/ 6.88	160	129
Dec.1919 - Dec.1920	Do.	11.93	12.93	324	242
1921 - Jan.-May	Do.	4.36	5.36	118	100
June-Dec.	1.6	2.82	4.42	77	83
1922 - Jan.-Sept.	Do.	2.73	4.33	74	81
Oct.-Dec.	1.7648	3.79	5.55	103	104
1923	Do.	5.22	6.98	142	131
1924	Do.	4.17	5.93	113	111
1925	Do.	2.56	4.32	70	81
1926	Do.	2.59	4.35	70	81
1927	Do.	3.04	4.80	83	90
1928	Do.	2.45	4.21	67	79
1929	Do.	1.99	3.75	54	70
1930 - Jan.-June	Do.	1.72	3.48	47	65
July-Dec.	2.00	1.25	3.25	34	61
1931 - Jan.-June	Do.	1.28	3.28	35	61
July-Dec.	Do.	1.48	3.48	40	65
1932 - Jan.-June	Do.	.80	2.80	22	52
July-Dec.	Do.	1.06	3.06	29	57
1933 - Jan.-June	Do.	1.05	3.05	29	57

1/ Price under government control.

Source: Average annual prices have been calculated from weekly quotations of Willett & Gray; they, therefore, differ somewhat from the annual average figure published by the same source.

Table 13. - Prices of 96 degree centrifugal Cuban sugar on New York market, C&F (Prompt), by months

(Cents per pound)

Month	Price ex-duty					Price duty-paid				
	1929	1930	1931	1932	1933	1929	1930	1931	1932	1933
January	2.03	1.99	1.34	1.14	0.72	3.79	3.75	3.34	3.14	2.72
February	1.95	1.97	1.32	.97	.73	3.71	3.73	3.32	2.97	2.73
March	1.93	1.82	1.30	.78	.96	3.69	3.58	3.30	2.78	2.96
April	1.88	1.71	1.30	.63	1.14	3.64	3.47	3.30	2.63	3.14
May	1.82	1.48	1.16	.60	1.33	3.58	3.24	3.16	2.60	3.33
June	1.74	1.36	1.27	.70	1.44	3.52	3.12	3.27	2.70	3.44
July	2.04	1.26	1.48	1.00	1.56	3.80	3.26	3.48	3.00	3.56
August	2.05	1.19	1.49	1.13		3.81	3.19	3.49	3.13	
September	2.19	1.15	1.41	1.16		3.95	3.15	3.41	3.16	
October	2.25	1.25	1.42	1.15		4.01	3.25	3.42	3.15	
November	1.97	1.39	1.38	1.07		3.73	3.39	3.38	3.07	
December	1.98	1.29	1.67	.83		3.74	3.29	3.67	2.83	
Average	1.99	1.49	1.38	.92		3.75	3.37	3.38	2.92	

Source: Average annual prices have been calculated from weekly quotations of Willett & Gray; they, therefore, differ somewhat from the annual average figure published by the same source.

General Basis and Methods of Cost Comparison

Principal competing country

As is evident from tables 4 and 10, Cuba is by far the most important source of duty-paid sugar imported into the United States and is therefore the principal competing country for the purposes of cost comparison under section 336.

Areas of the United States included in the cost comparison

Costs have been ascertained by the Commission for cane sugar and beet sugar produced in continental United States and for cane sugar produced in the three principal Insular areas, Hawaii, Puerto Rico, and the Philippine Islands. Under the provisions of the Tariff Act of 1930, however, comparison with Cuban costs for the purpose of determining the duty on sugar must be confined to the costs of continental United States and of Hawaii. The cost data for Puerto Rico and the Philippines are shown in a separate section of this report.

Louisiana and Hawaii, like Cuba, produce raw cane sugar in crushing mills and this raw sugar is subsequently refined in separate factories. For the purpose of determining the rate of duty on raw sugar, therefore, direct comparison should be made between raw sugar costs in these two areas of the United States and in Cuba. On the other hand, beet sugar is produced in factories which carry the process of manufacture to its completion in the form of refined sugar and it is impracticable to determine the cost of raw beet sugar. Consequently, in order to compare Cuban costs with costs of beet sugar, it is necessary to add to the cost of raw sugar in Cuba the cost of refining such sugar, whether in Cuba

itself or in continental United States. This method of comparison affects also the determination of the principal markets and of transportation costs. The markets for raw cane sugar are refineries, whereas the markets for beet sugar, and for the refined cane sugar which is to be compared with beet sugar, are consuming points throughout the United States.

Cost period

Costs of production of so-called company-grown sugar cane (i.e. cane produced by the same companies which operate the crushing mills), and operating costs of sugar mills and sugar-beet factories, were obtained for each of the three years 1929, 1930, and 1931 or the crop years beginning in those calendar years, respectively. On the other hand, costs of production of sugar cane, other than company-grown cane, and costs of production of sugar beets were ascertained only for the two years 1930 and 1931. It is ordinarily impracticable to obtain from a farm operator satisfactory information concerning costs except for the current year and the year immediately preceding. In order to extend the cost comparison to the full period of three years it has been assumed that the costs of production of sugar cane on independent farms in Louisiana and in Cuba during 1929 bore the same relation to the costs in 1930 as was found to exist between the costs of those two years in the case of company-grown cane. This assumption involves only a very slight margin of error, as the factors entering into the cost of so-called independent cane are substantially the same and subject to the same variations as those entering into company-grown cane. No such adjustment was practicable in the case of sugar beets since beet-sugar factories seldom produce the beets them-

selves. In this case it was assumed that the cost of producing sugar beets in 1929 was the same as in 1930. A somewhat different result would have been obtained for 1929 if the costs of beet sugar for that year had been calculated by adjusting the costs of 1930 for differences in wages and in yields per acre in 1929 as compared with 1930. This adjustment would have amounted to about a quarter of a cent per pound on beet sugar for 1929, but the change would have affected the general average cost for continental and Hawaiian sugar for the 3-year period less than 0.04 cent per pound. About seven eighths of the Hawaiian sugar is company-grown and the costs of company-grown cane have been used as the basis for costs of all cane in Hawaii, the Commission deeming itself not warranted in incurring expense to ascertain the costs of production of cane by independent farmers.

The years 1929, 1930, and 1931 were in all of the areas included in the investigation fairly normal years as regards yields per acre of sugar cane or sugar beets. Special circumstances affecting the representativeness of these years are mentioned in connection with the costs in the several areas. In all of the cane-producing areas compared there was during the period covered by the investigation a progressive decline in costs per acre from one year to the next, chiefly due to lower wages of labor.

Costs of sugar beets and sugar cane

Much the largest single item in the cost of sugar, representing about half of the total, is the cost of the raw material, cane or beets. Since it is the evident intent of the Congress that the duty on sugar should afford adequate protection to the domestic producers of sugar beets and sugar cane, a proper comparison of the domestic and foreign costs of sugar should use as a basis the farm costs of producing cane or beets rather than the prices paid by the factories for them. In addition, however, to ascertaining the costs on this basis, the present report includes data regarding the prices paid by sugar mills and beet sugar factories for cane and beets, and the total cost of sugar on the basis of these prices. It is a common practice in the industry to base the price for beets or cane

on the price of sugar. Therefore, the prices paid for these raw materials have little significance for the purpose of calculating cost of production of sugar.

In Hawaii the great bulk, and in Louisiana and Cuba a large fraction, of the sugar cane is produced by the same concerns which operate the crushing mills and manufacture the raw sugar. Ordinarily such producers have systematic and satisfactory accounting records of their costs of producing cane and the required data have been taken by the Commission directly from such records.

On the other hand, both in the United States and in Cuba, so-called independent producers of beets and cane, who operate mostly relatively small farms, rarely keep books of record or have very precise information concerning costs of production. In some areas the inadequacy of the data maintained by these producers has been remedied in part by information available from the cane-sugar mills or the beet-sugar factories, which supply part of the materials used in production or otherwise have definite information regarding certain items of cost incurred by the independent farmers. Costs were obtained from a sufficient number of these independent farmers to be representative. The average costs of production of cane and beets as ascertained by the Commission are as accurate as can be obtained with any reasonable expenditure of time and money.

The items included in the costs of production of sugar cane and sugar beets are substantially the same in all the areas, domestic and foreign, which were compared. They include cost of seed, cost of planting, cultivation and harvesting, cost of fertilizers and other supplies, allowances for depreciation and interest on machinery, buildings and other equipment, and either interest on the investment in land or a rental charge for the land. Where irrigation is practice this item is also included in costs.

The costs were ascertained, in the first instance, on an acreage basis and were then converted to cost per ton on the basis of the yield per acre.

Special explanations concerning certain of the cost items in particular areas are presented in connection with the costs in those areas.

Costs of production of sugar

Costs were obtained from cane-sugar mills and beet-sugar factories representing the great bulk of the total output in continental United States, Hawaii, and Cuba. The proportions covered by the investigation in the several areas are shown elsewhere.

In determining the cost of production of sugar by any given factory the item of raw material was entered on the basis of the cost of production of the cane or the beets. In the case of company cane this cost of production was directly available. In the case of cane purchased from independent farmers and in the case of sugar beets, the average farm cost of production in the area or areas from which the mill drew its supply was used.

Many of the cane-sugar mills in Louisiana, Hawaii, and Cuba operate railroads for the hauling of cane. The operating costs of these railroads, together with depreciation and interest on investment, were entered as items in the cost of sugar, together with any freight paid to other railroads on sugar cane. In the case of sugar beets the costs of transportation, whether by trucks or railroad, from the fields to the factories were included.

The other major items in the costs of production of raw sugar are the operating expenses of the factories, packing materials, depreciation, and interest on investment. As already stated, for the purpose of the com-

parison between beet sugar and Cuban sugar the further cost of refining the Cuban sugar must be taken into account.

Methods of averaging

For certain purposes in the compilation of the cost figures, simple averages have been computed and for other purposes weighted averages. The simple average represents merely the sum of the figures for the individual farms, factories or periods of time divided by the number thereof, whereas weighted averages take into consideration the relative importance of the quantities produced by the several farms or factories or produced in the several periods of time.

Simple averages have been used for the purpose (a) of combining the costs of production on individual farms (other than company-owned farms) into averages for the district in which they are located, and (b) of combining figures of costs of any kind for the three separate years covered into a general average for the period. Since it is impossible to canvass any very large proportion of the total number of "independent" farms producing beets or cane, it is believed that a simple average is more nearly representative than one which might be dominated by the low or high figures for a few large farms. It is still more appropriate that the figures for each of the three years used as the basis of cost comparison should be treated as of equal importance so that exceptional figures of any one year may not be given great or small weight according to the volume of business.

Weighted averages have been used for all other combinations of data. Thus the cost of the sugar beets entering into the average cost of beet sugar was obtained by multiplying the cost of the beets (a simple average of the costs for the several farms) in each district by the quantity

of beets from the district which were consumed by the factories included in the cost inquiry. Again, the average conversion cost for all beet-sugar factories was determined by giving to the cost for each factory a weight corresponding to its output. Similar methods were used for cane sugar in all the areas.

Comparability of domestic and Cuban sugar

All sugar of any given degree by the polariscope test is very closely similar in character and market value, whether it be produced from sugar cane or sugar beets and in whatever area it may be produced. There are slight variations as regards the nature of the impurities in unrefined sugar and in other technical aspects, but these are insufficient ordinarily to have any effect on the price at which sugar of any given degree can be sold.

In comparing the costs of Hawaiian and Louisiana raw sugar with the costs of Cuban raw sugar, the costs for each mill have been adjusted to the basis of 96 degree sugar. That is to say, the total production of raw sugar by the mill was first divided into the total cost; the average test of the sugar was then ascertained, and the average cost was increased or decreased according to the relation of this test to 96 degrees. As a matter of fact the average test of the raw sugar produced by most mills varies relatively little, usually ranging from 95 to 98 degrees. The average test of all Cuban raw sugar is a little above 96 degrees, that of all Hawaiian sugar about 98 degrees, and that of all Louisiana sugar about 96 degrees.

Refined sugar produced from Cuban raw sugar is practically identical in all respects with refined beet sugar, although in certain markets the latter ordinarily sells at a slight discount.

Beet Sugar

Costs of production of sugar beets and beet sugar were obtained in all the States in which there was any important output during the period covered by the investigation. The factory costs covered the three years 1929, 1930, and 1931 and the farm costs the two years 1930 and 1931.

Farm costs of sugar beets

Costs of production of sugar beets were obtained from 903 farms in 1930 and 927 farms in 1931. The total production of beets on the farms included was 528,454 tons in 1930 and 530,184 tons in 1931, representing, respectively, 5.7 percent and 6.7 percent of the output in the entire country.

The average yields per acre on the farms covered by the cost inquiry, taken together, were slightly higher than the average yields on all farms in the United States, as reported by the Department of Agriculture.

Table 14 shows for the principal States covered by the inquiry and for all other States a comparison between the yields per acre as reported by the Department of Agriculture for the two years covered by the cost inquiry and the yields for the 5-year period 1928-32 and the 10-year period 1923-32. It will be seen that the yields in 1930 and 1931 were fairly normal, averaging about the same as for the 5-year

period 1928-1932. The table also gives more detailed information concerning the farms covered by the cost inquiry.

Table 14. - Sugar beets: Average yields per acre, as indicative of representativeness of the years 1930 and 1931, and of the farms covered by the cost inquiry

Average yields for farms covered by the cost inquiry, by States, are approximate, being simple averages of the figures for the several districts in the State

State	Average yield per acre on all farms in State as reported by the U.S. Dept. of Agriculture				Average yield per acre on farms covered by cost inquiry		Number of farms covered by cost inquiry		Percentage of total production covered by cost inquiry	
	Ten years 1923-1932 (simple average)	Five years 1928-1932 (simple average)	1930	1931	1930	1931	1930	1931	1930	1931
	Tons	Tons	Tons	Tons	Tons	Tons				
Michigan	7.9	7.8	6.9	10.0	8.5	10.9	95	99	2.1	2.9
Nebraska	12.7	12.9	14.0	13.7	14.3	14.0	126	127	7.4	8.1
Colorado	12.5	12.4	13.7	11.3	15.1	12.3	209	209	3.3	3.6
Montana	11.1	11.4	12.7	11.4	14.4	12.4	72	75	8.4	7.8
Utah	11.8	12.5	12.6	10.3	14.6	10.8	128	129	4.4	4.3
Idaho	10.4	10.7	10.1	9.1	12.2	10.8	50	48	2.6	2.8
California	10.2	12.2	11.8	11.9	16.1	14.6	52	65	18.2	17.1
All other States	-	-	-	-	12.3	11.3	171	175	-	-
United States	10.9	11.3	11.9	11.1	1/13.9	1/12.4	903	927	5.7	6.7

1/ Weighted average; see table 15.

Data concerning sugar beet costs were obtained in part directly from the farmers, many of whom had records of the important items of expenditure. The data of acreage and production of each farm were obtained from or checked by the records of the local beet sugar factory. General data concerning prices of seed and fertilizer and values of sugar beet land were obtained also from the sugar factories. The field or team operations are to a considerable extent performed at custom rates for different operations, and these rates could be ascertained with approximate accuracy in many of the areas. The hand operations (thinning, hoeing, pulling and topping) are usually performed by hired labor except on small farms. To the extent that these operations are performed by the farmer or members of his family wages were allowed for them at the customary rates for hired labor.

Table 15 shows for the United States as a whole the average cost of production of sugar beets per acre by items, together with the equivalent total cost per ton of beets produced (as to the method of averaging here used, see page 35). It will be seen that by far the largest single item in the cost of production is that of thinning, hoeing, and topping, which represented in 1930 one third of the total including land charge.

For the United States as a whole the average cost of production of sugar beets per acre, including interest was $75.08 in 1930 and $69.73 in 1931. The yield per acre on the farms covered by the cost inquiry averaged 13.90 tons in 1930 and 12.36 tons in 1931, so that the cost per ton was $5.40 in 1930 and $5.64 in 1931. These costs include imputed interest on investment at 6 percent.

Table 15. - Sugar beets: Cost of production in the United States for irrigated and non-irrigated districts and for all districts combined

Note: Costs for each district taken as simple average of figures for the reporting farms; general averages obtained by weighting each district by the quantity of beets from the district consumed by factories reporting to the Commission.

	Irrigated districts		Non-irrigated districts		Total	
	1930	1931	1930	1931	1930	1931
Costs per acre -						
Direct costs:						
Preparation and planting	$7.76	$7.63	$6.83	$6.50	$7.62	$7.50
Cultivation	4.43	4.25	4.91	4.60	4.51	4.29
Irrigation	7.38	7.84	-	-	6.24	6.93
Thinning, hoeing, topping	25.99	20.91	24.75	20.96	25.80	20.92
Harvesting	13.99	10.58	10.98	9.95	13.52	10.51
Manure	5.88	5.69	3.33	3.15	5.49	5.39
Fertilizer	1.00	1.40	2.24	1.93	1.19	1.46
Seed	3.02	3.12	2.93	2.91	3.00	3.09
Taxes	2.46	2.56	1.32	1.16	2.28	2.40
Miscellaneous	1.25	1.44	.84	.76	1.18	1.36
Total	73.16	65.42	58.13	51.92	70.83	63.85
Less credits for by-products, etc.	3.92	3.04	2.34	2.39	3.68	2.96
Total, net	69.24	62.38	55.79	49.53	67.15	60.89
Land charge 1/	8.54	9.44	4.59	4.24	7.93	8.84
Total including land charge	77.78	71.82	60.38	53.77	75.08	69.73
Yield per acre, tons	14.75	12.64	9.28	10.18	13.90	12.36
Cost per ton:						
Including land charge	$5.27	$5.68	$6.51	$5.28	$5.401	$5.644
Land charge					.535	.718
Excluding land charge					4.866	4.926

1/ Imputed interest on investment at 6 percent.

Table 16 shows the total cost of production of sugar beets per acre and per ton in each of the districts canvassed by the Commission. These are simple averages obtained by adding the figures for each farm and dividing by the number of farms in the district. In most of the districts the yields per acre in 1931 were lower than in 1930 on account of unfavorable climatic conditions and, consequently, although the costs per acre were in general lower in the later year the costs per ton were in many of the districts higher in 1931 than in 1930. There were, however, very considerable variations among the districts in this respect.

Table 18. - Sugar beets: Cost of production by districts (including land charge) 1/

District	Yield per acre		Cost per acre		Cost per ton	
	1930	1931	1930	1931	1930	1931
	Tons	Tons				
Michigan -						
Sebewaing	8.21	11.31	$63.67	$60.13	$7.76	$5.32
Blissfield	7.84	11.05	64.00	58.84	8.17	5.33
St. Louis	9.11	10.80	66.46	59.79	7.30	5.54
Bay City	8.57	10.27	62.64	54.23	7.31	5.28
Minnesota -						
Chaska	10.42	10.87	57.35	54.89	5.50	5.05
East Grand Forks	7.99	8.44	59.74	47.53	7.48	5.63
South Dakota -						
Belle Fourche	12.89	10.28	72.20	65.86	5.60	6.41
Colorado -						
Ft. Collins	15.43	13.19	76.69	69.63	4.97	5.28
Greeley	16.81	11.52	75.60	64.93	4.50	5.64
Longmont	14.94	12.57	86.46	73.30	5.78	5.83
Ft. Morgan	15.38	13.12	73.35	65.65	4.77	5.01
Sterling	13.85	10.98	69.43	62.52	5.01	5.69
Brighton	15.33	13.80	73.76	67.15	4.81	4.86
Rocky Ford	15.45	10.52	75.63	65.43	4.89	6.22
Delta	11.68	14.71	83.48	77.60	7.15	5.27
Nebraska -						
Grand Isle	11.92	9.85	58.89	61.38	4.94	5.21
Scottsbluff	14.68	14.67	72.30	67.85	4.93	4.63
Kansas -						
Garden City	11.85	9.09	56.68	53.82	4.78	5.92
Wyoming -						
Torrington	16.00	13.68	72.70	65.49	4.54	4.79
Lovell	15.84	13.33	86.24	76.51	5.44	5.74
Worland	15.03	12.53	90.15	73.49	6.00	5.87
Utah-						
Gunnison	12.16	6.67	82.51	82.62	6.78	12.39
Spanish Fork	15.24	11.78	83.75	80.82	5.50	6.86
Layton	17.64	11.71	94.77	89.33	5.37	7.63
Logan	13.86	11.11	81.28	74.58	5.86	6.71
Garland	12.98	9.93	74.00	66.70	5.70	6.72
Idaho -						
Idaho Falls	12.31	11.07	66.30	64.22	5.39	5.80
Burley	10.67	9.51	80.16	76.41	7.51	8.03
Montana -						
Missoula	13.89	11.94	76.46	63.22	5.50	5.29
Billings	14.82	12.62	82.34	76.07	5.56	6.02
Sydney	13.74	12.12	66.47	60.59	4.84	5.00
California -						
Oxnard	15.20	14.01	104.44	99.10	6.87	7.07
Sacramento delta	16.40	14.91	95.21	85.37	5.81	5.76

1/ Land charge is imputed at 6 percent on investment.

Costs of production of beet sugar

As already stated, beet sugar is a refined product and the factory costs include all operations necessary to produce the finished article. Since the whole process of handling sugar beets is materially different from that of handling sugar cane, the individual items of factory cost are not directly comparable with those for raw cane sugar.

Costs were obtained from a large majority of the operating beet-sugar factories in the United States, representing the great bulk of the total output. Table 17 shows the total number of factories in the United States, distinguishing those idle from those operating, and the number covered by the cost inquiry, together with the total production of beet sugar by all factories and by the factories covered in the inquiry. It should not be inferred from the fact that a considerable proportion of the beet-sugar factories in the United States were idle during the three years covered by the investigation that the production of beet sugar was exceptionally small. As a matter of fact during each of the three years production was greater than in any year preceding 1929.

Table 17. - Beet sugar: Number and production of factories covered by cost investigation compared with totals for all factories

	1929-30	1930-31	1931-32
Number of factories -			
Total in United States -			
Idle	26	27	39
Operating	78	77	65
Covered by cost inquiry	66	65	58
Production of beet sugar, tons -			
By all factories	1,010,000	1,205,000	1,148,000
By all factories covered in cost inquiry	939,000	1,089,000	1,050,000
Percent covered	93	90	91

In computing the factory costs of production of beet sugar the Commission allowed normal rates of depreciation, the rates used by the Commission being the same as those allowed by the U.S. Internal Revenue Bureau. The cost of packing was included for packages of all sizes, thus being somewhat higher than the cost would have been if packed only in 100-pound bags. The costs to this extent differ in basis from those for Cuban sugar which, both in case of sugar refined in Cuba and that refined in continental United States, include only the cost of packing in 100-pound bags. It was found impracticable to make the same distinction for beet sugar.

Table 18 shows the weighted average cost of production of beet sugar in the United States (including imputed interest on investment in farms and factories) during each of the three years covered by the investigation together with the simple average of the figures for the three years. The 1929-30 item for the cost of sugar beets represents the 1930-31 costs of production of beets in the several districts applied to the quantities from each district consumed by the factories in 1929-30.

The table shows that the cost of production of sugar beets represented on the average for the three years 51 percent of the total cost of beet sugar. That total cost, including imputed interest on investment at 6 percent, was 4.11 cents per pound in 1929-30, 4.00 cents in 1930-31, and 3.67 cents in 1931-32, the simple average for the three years being 3.93 cents.

During 1930-31 the price paid by the beet sugar factories for sugar beets was considerably above the cost of production as ascertained by the Commission's investigation. The price also somewhat exceeded the cost in 1931-32. Consequently on the average for the three years the cost of production of beet sugar on the basis of the price paid by the factories for beets amounted to 4.39 cents per pound as compared with 3.93 cents on the basis of the cost of producing the sugar beets.

Table 18a shows costs of production excluding interest on investment both in beet production and in beet sugar factories, together with the amount of the item of imputed interest, at 6 percent, on such investment. 1/ For the 3-year period the total cost f.o.b. factory, exclusive of interest, was 3.327 cents per pound of sugar. The interest item amounted to 0.601 cent per pound, of which 0.218 cent was on the investment in the production of beets and 0.383 cent on the investment in the factories. For convenience, costs including delivery to market are also shown; the details regarding transportation are set forth in a subsequent section.

1/ For a discussion of the significance of costs exclusive of interest, see part IV of this report.

Table 18. - Beet sugar: Average cost of production in United States, f.o.b. factory

Note: Costs in first section of table computed by substituting average farm cost of production of sugar beets in 1930 for price paid for beets by the factories in 1929-30 and 1930-31, and farm cost in 1931 for price paid in 1931-32 (for farm costs see table 15). All costs for any one year averaged by weighting costs of each mill by its production.

(Cents per pound of sugar, except as indicated)

	1929-30	1930-31	1931-32	Simple average 3 years
Cost of raw materials:				
Farm cost of producing beets (table 15)				
Per ton Dollars	1/ 5.411	5.401	5.644	5.485
Per pound of sugar obtained (cents)	1.991	2.108	1.967	2.022
Freight and hauling of beets	.207	.211	.185	.201
Receiving expense	.244	.191	.126	.187
Raw sugar and molasses used as material	.122	.083	.066	.092
Total	2.564	2.598	2.344	2.502
Conversion cost:				
Direct manufacturing cost	.780	.702	.599	.694
Factory burden	.400	.333	.309	.347
Packing, shipping, and warehouse expense	.211	.180	.155	.182
General and administrative	.085	.066	.059	.070
Total	1.476	1.281	1.122	1.293
Total materials and conversion	4.040	3.879	3.466	3.795
Less credits for by-products and collateral operations	.367	.245	.137	.250
Net material and conversion cost	3.673	3.634	3.329	3.545
Interest imputed on net equity at 6 percent	.439	.368	.342	.383
Total cost (including interest) on basis of cost of production of beets	4.112	4.002	3.671	3.928
Price paid by factories for beets				
Per ton Dollars	7.097	7.097	5.920	6.705
Per pound of sugar produced (cents)	2.611	2.770	2.063	2.481
Cost of sugar on basis of price paid for beets - cents per pound	4.732	4.664	3.767	4.387
Short tons of beets used	6,911,432	8,502,480	7,322,165	-
Quantity of sugar produced - 1,000 pounds	1,878,559	2,178,148	2,100,823	-
Yield per ton of beets - pounds	272	256	287	272

1/ Farm costs were not obtained for 1929-30. This figure represents the farm costs in 1930-31 in the several areas applied to the quantities used from the districts, respectively, in 1929-30.

Table 18(a). - Beet sugar: Cost of production excluding and including interest on investment in beet production and factories

Costs without interest exclude interest on borrowed money as well as on capital owned. Imputed interest taken at 6 percent on total investment, including that financed by borrowing.

(Cents per pound of sugar, except as indicated)

	1929-30	1930-31	1931-32	Simple average, 3 years
Costs without interest				
Production of beets (table 15) per ton	1/ $4.883	$4.866	$4.926	$4.892
Equivalent per pound of sugar obtained, cents	1.797	1.899	1.717	1.804
Transportation of beets and factory operations	1.682	1.526	1.362	1.523
Total cost, f.o.b. factory	3.479	3.425	3.079	3.327
Imputed interest, at 6 percent, on investment in -				
Production of beets, per ton	1/ $0.527	$0.535	$0.718	$0.593
Equivalent per pound of sugar, cents	.194	.209	.250	.218
Beet sugar factories	.439	.368	.342	.383
Total	.633	.577	.592	.601
Costs including imputed interest				
Beet production	1/ 1.991	2.108	1.967	2.022
Transportation of beets and factory operations	2.121	1.894	1.704	1.906
Total, f.o.b. factory	4.112	4.002	3.671	3.928
Cost of transportation of sugar to all markets supplied (see table 34)	.484	.477	.527	.496
Total delivered cost				
Without interest	3.963	3.902	3.606	3.823
With imputed interest	4.596	4.479	4.198	4.424

1/ See footnote to table 18.

Louisiana Cane Sugar

The Commission obtained costs of production of sugar cane on independent farms in Louisiana for the two years 1930 and 1931. The data obtained with respect to the costs of sugar cane on company farms and the costs of converting the cane into sugar covered the three years 1929-31. Yields per acre of cane during the years covered by the cost inquiry were normal. According to the Department of Agriculture the average yield on all farms in Louisiana was 16.2 tons per acre in 1928, 18.8 tons in 1929, 17.1 tons in 1930, 15.1 tons in 1931, and 15.5 tons in 1932, the 5-year average being 16.5 tons.

Sugar cane on independent farms

Costs of production of sugar cane were obtained from 187 farms (other than those operated by the sugar mills themselves) in 1930 and 186 in 1931. The production of these farms was equal to about 11 percent of the total output of the State during each of the years. The average yield per acre on these farms was slightly below the average for the State as a whole, the latter average including the output of company farms which have a somewhat higher average yield than the independent farms. Table 19 shows details regarding the independent farms covered by the cost inquiry.

Table 19.- Louisiana sugar cane: Data regarding the farms covered by the cost inquiry

Average yield per acre on all farms in state, tons-		
Five year average, 1928-1932	16.5	
1930	17.1	
1931	15.1	
Average yield per acre on farms covered by the cost inquiry, tons-		
Independent farms		
1930	15.4	
1931	13.9	
Company farms		
1929	16.0	
1930	17.0	
1931	15.6	
Number of farms producing sugar cane by the census of 1929		6,095
Number of independent farms covered by cost inquiry-		
1930		187
1931		186
Total acres of sugar cane harvested in state-		
1929		155,446
1930		149,217
1931		148,117
Total acres of cane harvested on farms covered by cost inquiry-		
Independent farms		
1930		16,563
1931		16,532
Company farms		
1929		36,558
1930		38,701
1931		33,677

	1930	1931
Acreage of cane harvested on independent farms covered by the inquiry -		
Planted in same year ("plant" cane)	7,841	7,832
Planted in preceding year ("first stubble")	7,876	6,902
Planted in earlier years (second and third stubble)	846	1,798

Most of the independent farms which grow sugar cane in Louisiana devote their operations primarily to cane, and the Commission selected for the ascertainment of costs only farms on which cane represented 80 percent or more of the value of products sold. The only other crops raised to any extent on these farms are corn, used for feed for the work stock, and legumes planted for the purpose of maintaining soil fertility. All costs of farm operations on the farms included in the inquiry were ascertained, and against the total was credited any receipts from the sale of other products. These receipts were equal to only about 6 percent of the receipts from cane.

On the small farms included in the inquiry a considerable part of the labor was performed by the farm operator or members of his family. The value of their labor was calculated at the rate for similar hired labor in the given community. Normal depreciation and repair charges were included in the cost. Imputed interest at 6 percent was included, on the basis of the market value of land, the investment in buildings and other plant, and the inventory value of "plant" and "stubble" cane, livestock, machinery, and equipment and supplies. Changes in the value of inventory during the year were added to or deducted from expenses incurred during the year.

Table 20 shows by items the costs of production of sugar cane on independent farms in Louisiana. It will be seen that on the average in 1930 the cost per acre was $64.30, the average yield per acre 15.4 tons, and the average cost per ton $4.18. The corresponding figures for 1931 were $57.08 per acre, 13.9 tons per acre, and $4.12 per ton.

The table also shows the total cost per ton by parishes, the figures for each parish being obtained by adding the costs for the individual farms and dividing by the number of farms.

Table 20. - Louisiana sugar cane: Cost of production on independent farms, by items

Average for each Parish is a simple average of costs of the several farms. General averages for State weighted by the quantity of cane from each Parish consumed by reporting mills.

	1930	1931
Costs per acre -		
Labor	$36.57	$32.32
Repairs and depreciation -		
Machinery	2.96	2.60
Buildings, fences, and drains	3.45	3.02
Taxes	3.01	2.91
Miscellaneous	5.84	5.46
Total above	51.83	46.31
Credits and adjustments -		
Adjustments for inventory	3.58	1.43
Miscellaneous credits	-4.01	-2.81
Net cost without interest	51.40	44.93
Imputed interest on investment at 6 percent	12.90	12.15
Total cost per acre including interest	64.30	57.08
Yield per acre of cane -tons	15.36	13.86
Total cost per ton, including interest	$4.185	$4.119
Imputed interest	.857	.878
Total cost per ton excluding interest	3.328	3.241
Total cost per ton, by Parishes -		
Baton Rouge	4.50	4.33
Lafayette	4.68	4.67
St. Martinsville	3.66	3.39
New Iberia	4.17	4.03
Franklin	4.47	4.41
Donaldsonville	4.04	4.01
Houma-Thibodaux	3.84	3.89

Costs of production of company cane

Costs of production of company cane were obtained from all the sugar mills for which costs were secured if such mills were engaged also in the production of cane. The acreage of company cane covered by the cost inquiry represented approximately half of the total acreage of company cane produced in Louisiana and approximately one-fourth of the total acreage of all cane in the State. The yields per acre were slightly above the average for cane grown on all farms.

Table 21 shows the costs of production of company cane in Louisiana. The total cost per acre was $93.52 in 1929-30, $79.20 in 1930-31, and $73 in 1931-32, the corresponding figures per ton of cane being $5.85, $4.66, and $4.68, respectively.

Table 21. - Louisiana sugar cane: Cost of production on company farms

	1929-30	1930-31	1931-32
Acres harvested	36,558	38,701	33,677
Tons produced	584,726	659,432	526,763
Average yield per acre, tons	16.0	17.0	15.6
Costs per acre -			
Preparing and planting	$15.38	$11.57	$11.43
Harvesting and weighing	18.09	14.60	11.65
Seed cane	4.15	3.47	3.56
Fertilizer	3.33	3.90	2.93
Overseers	4.05	3.73	3.80
Drainage	2.85	1.81	1.48
Roads and bridges	.13	.18	.08
Repairs	6.84	3.60	3.88
Stable and feed expense	10.71	9.42	7.98
Loss on livestock	.38	.57	.67
Insurance	.96	.96	1.06
Taxes	2.89	2.83	2.99
Rent of equipment	.20	.35	.40
Depreciation	5.80	5.83	6.13
General and administrative	5.73	4.59	3.39
Miscellaneous	1.86	2.27	1.55
Transportation on plantation	.84	.28	.68
Total	84.69	69.96	63.66
Less sundry income	1.73	1.14	1.55
Net cost, excluding interest	82.96	68.82	62.11
Imputed interest on investment, at 6 percent	10.56	10.38	10.89
Total cost per acre, including interest	93.52	79.20	73.00
Cost per ton, excluding interest	5.185	4.048	3.981
Imputed interest on investment	.660	.610	.698
Cost per ton, including imputed interest	5.845	4.658	4.679

Costs of production of sugar

Costs of production were obtained from 23 sugar mills in Louisiana for 1929-30, 26 mills for 1930-31, and 24 mills for 1931-32. The mills costed produced in each of the 3 years somewhat over half of the total output for the State. Table 22 shows data regarding their volume of business and operating results other than costs.

Table 22. - Louisiana Cane Sugar: Data relating to operations of mills covered by cost inquiry

	1929-30	1930-31	1931-32
Number of mills costed	23	26	24
Production of sugar by all Louisiana mills, 1,000 pounds	399,220	367,386	310,454
Production by mills costed (equivalent as 96° sugar) 1,000 pounds	207,534	207,336	163,444
Percent of total	52.0	56.4	52.6
Total cane ground by mills costed, tons	1,409,952	1,373,115	1,083,679
Yield of sugar (96° basis) per ton of cane, pounds	147.19	151.00	150.82
Production of molasses, Gallons	8,851,096	7,840,111	5,981,310
Per ton of cane - Gallons	6.28	5.71	5.52
Equivalent (pounds)	73.5	66.8	64.6
Value of molasses per gallon, net, cents	9.8	6.4	4.2

As in the case of beet sugar factories, normal amounts for depreciation were included in Louisiana sugar mill costs (see p. 46).

Table 23 shows the cost of production of raw sugar in Louisiana on the basis of the farm costs of production of sugar cane, and also on the basis of the price paid for purchased cane. The costs of company cane are the recorded costs for each of the 3 years. In the case of purchased cane, representing the output of independent farmers, costs of production were available only for the last 2 years of the period. It was therefore assumed that the costs of the independent cane in 1929-30 bore the same relation to the costs in 1930-31 as was shown for company cane.

The table shows that, on the basis of cane production costs, the total cost of raw sugar at factory was 5.02 cents per pound in 1929-30, 4.25 cents in 1930-31, and 4.27 cents in 1931-32, the simple average for the 3 years being 4.51 cents. Costs of production of cane represented, on the average, 70 percent of total sugar cost.

The cost of production of sugar cane on independent farms throughout this period, as determined by the Commission's investigation, was considerably higher than the prices paid for such cane by the sugar mills. Costs of sugar computed on the basis of these prices were therefore materially lower than the costs computed on the basis of the farm cost of producing cane on independent farms.

Table 23 shows costs of production excluding interest on investment in cane farming and sugar milling, together with the item of imputed interest on investment. For the 3-year period the average cost of sugar, excluding all interest, was 3.775 cents per pound and the interest item, at 6 percent, averaged 0.738 cent per pound. 1/

1/ For a discussion of the significance of costs exclusive of interest see Part IV of this report.

Table 23. - Louisiana cane sugar: Cost of production of raw sugar, f.o.b. mill

(All cost items in cents per pound of 96 degree sugar, except as indicated)

	1929-30	1930-31	1931-32	Simple average 3 years
Cane data				
Tons of cane ground -				
Company cane	504,662	561,512	438,800	-
Independent cane	905,290	811,603	644,879	-
Total	1,409,952	1,373,115	1,083,679	-
Percent company cane	35.79	40.89	40.49	-
Percent independent cane	64.21	59.11	59.51	-
Cost of production of cane, including imputed interest on investment -				
Per ton of cane -				
Company cane 1/	$5.821	$4.660	$4.667	$5.049
Independent cane (table 20)	5.183	4.185	4.119	4.496
Weighted average	5.411	4.389	4.338	4.713
Equivalent per pound of sugar obtained (cents)	3.676	2.907	2.876	3.153
Costs on basis of cost of production of cane				
Cost of cane (cost of production as above)	3.676	2.907	2.876	3.153
Cost of transportation of cane to mill 2/ -				
Company railroad operation, including depreciation	.161	.141	.153	.152
Freight paid to other carriers	.181	.173	.162	.172
Hoisting charges	.057	.032	.045	.045
Total transportation	.399	.346	.360	.369
Factory operations -				
Mill expense	.610	.521	.440	.524
Packing cost	.058	.050	.040	.049
Repairs and maintenance	.228	.152	.160	.180
Taxes and insurance	.097	.108	.109	.105
Depreciation	.182	.192	.215	.196
General and administrative	.116	.096	.065	.092
Total factory operations	1.291	1.119	1.029	1.146
Total gross cost	5.366	4.372	4.265	4.668
Less credits for -				
Sales of bagasse	.125	.089	.047	.087
Molasses	.419	.244	.155	.273
Net cost	4.822	4.039	4.063	4.308
Imputed interest on investment in transportation equipment and factory, at 6 percent	.198	.208	.210	.205
Total cost at factory, including interest	5.020	4.247	4.273	4.513
Cost on basis of price paid for purchased cane				
Price paid by factories for purchased sugar cane -				
Per ton	$3.554	$3.197	$3.327	$3.359
Cost of cane to factories on basis of cost of production of company cane and price paid for purchased cane (cents per pound of sugar)	2.966	2.520	2.564	2.683
Factory cost of raw sugar on basis of price paid for purchased cane	4.310	3.860	3.961	4.043

1/ These figures differ slightly from those in table 21, because the weight assigned to the cost of each company-farm is the quantity of cane ground instead of the total quantity produced, part of which is retained for seed.

2/ All items computed by dividing expenditure by total pounds of sugar, although each item actually incurred with reference to only part of the cane.

Table 23a. -- Louisiana cane sugar: Costs of production of raw sugar excluding and including interest on investment in cane production and milling

Costs without interest exclude interest on borrowed money as well as on capital owned. Imputed interest taken at 6 percent of total investment including that financed by borrowing

(Cents per pound of sugar, except as indicated)

	1929-30	1930-31	1931-32	Simple average 3 years
Costs without interest:				
Production of cane, per ton -				
Company-grown (table 21) 1/	$5.140	$4.203	$4.134	$4.492
Independent (table 20)	$4.080	$3.328	$3.241	$3.550
Weighted average	$4.459	$3.686	$3.603	$3.916
Equivalent per pound of sugar obtained - cents	3.029	2.441	2.389	2.620
Transportation of cane and factory operations, less molasses and sundry credits (table 23)	1.146	1.132	1.187	1.155
Total cost f.o.b. sugar mill	4.175	3.573	3.576	3.775
Imputed interest, at 6%, on investment in-				
Production of cane, per ton -				
Company-grown 1/	$0.681	$0.483	$0.526	$0.563
Independent farms	$1.109	$0.857	$0.878	$0.948
Weighted average	$0.952	$0.703	$0.735	$0.797
Equivalent per pound of sugar, cents	.647	.466	.487	.533
Transportation (by company railways) and milling	.198	.208	.210	.205
Total	.845	.674	.697	.738
Costs including interest:				
Production of cane, average	3.676	2.907	2.876	3.153
Transportation and milling	1.344	1.340	1.397	1.360
Total, f.o.b. mill	5.020	4.247	4.273	4.513
Costs delivered at New Orleans -				
Without interest	4.322	3.705	3.696	3.908
With imputed interest	5.167	4.379	4.393	4.646

1/ See footnote to table 23.

Hawaiian Cane Sugar

During the period covered by the Commission's cost investigation there were 46 sugar mills operating in the Hawaiian Islands. Costs were obtained from nearly all of these. The production of the mills costed was in the neighborhood of 95 percent of the total output of the islands.

About seven eighths of all the sugar cane ground by the Hawaiian mills is produced by the same companies which operate the mills. A small quantity is produced by farmers who lease land from the sugar mill companies and a still smaller quantity is produced by independent farmers on other land. Since the costs of production of company-grown cane were readily available and accurate, it was not deemed proper to incur the considerable expense which would have been involved in ascertaining the farm costs of production on independent farms.

The average yields per acre in Hawaii during the 3 years covered by the cost investigation were normal and there were no special circumstances causing any of the items of cost of production of cane to be exceptionally high or exceptionally low, apart from the downward trend of wages.

Costs of production of company-grown cane

Table 24 shows the costs of production of company-grown cane in Hawaii during the period covered by the investigation. The average cost per acre, including interest on investment, was $376.40 in 1929-30, $355.74 in 1930-31, and $335.73 in 1931-32. The average yield per acre in Hawaii is much higher than in either Louisiana or Cuba, being approximately 64 tons during each of the 3 years. The total cost of production per ton averaged $5.89 in 1929-30, $5.54 in 1930-31, and $5.21 in 1931-32, the simple average of these figures being $5.55

The largest items of expense of growing sugar cane in Hawaii are cultivation and irrigation, administrative expense, fertilizer, and interest on investment, including interest on the value of land as well as on costs of irrigation works and other equipment.

Table 24. - Hawaiian sugar cane: Cost of production on company farms

	1929-30	1930-31	1931-32
Acres harvested	103,044	110,721	115,183
Tons produced	6,581,295	7,106,154	7,427,964
Average yield per acre, tons	63.9	64.2	64.5
Costs per acre -			
Preparing and planting	$13.90	$12.89	$11.40
Cultivating and irrigating	81.43	75.73	75.30
Water	20.92	19.61	20.09
Fertilizer	55.65	52.92	51.03
Harvesting	20.92	20.56	18.65
Hauling to main line	20.06	19.47	17.50
Taxes	25.88	22.82	20.43
Depreciation	21.61	20.72	18.87
Administrative expenses	60.81	58.84	54.10
Total	321.18	303.56	287.37
Less sundry income	1.54	2.13	1.68
Net cost excluding interest	319.64	301.43	285.69
Imputed interest on investment, at 6 percent	56.76	54.31	50.04
Total cost per acre	376.40	355.74	335.73
Total cost per ton without interest	5.005	4.697	4.430
Imputed interest	.888	.846	.776
Total cost per ton including imputed interest	5.893	5.543	5.206

Costs of production of sugar

Table 25 shows the costs of production of raw sugar in Hawaii. The cost given for production of cane is that of company cane as shown in table 24. The total cost of sugar at factory, including interest on investment, was 3.17 cents per pound in 1929-30, 2.97 cents in 1930-31, and 2.78 cents in 1931-32, the simple average being 2.97 cents. The table also shows costs computed on the basis of prices paid for that part of the cane which was purchased from tenants and from other producers. The price paid for the small quantity purchased was considerably lower than the cost of company cane, but this difference is partly offset by other expenses incurred on cane purchased from tenants so that the total cost of production of sugar based on these purchase prices was but little lower than the cost based on the production cost for company cane.

Table 25a shows the cost of production of Hawaiian sugar excluding interest on investment both in the production of cane and in sugar mills, together with the amount of imputed interest on investment. For the 3-year period 1929-30 to 1931-32 the average cost f.o.b. mill, excluding interest, was 2.542 cents per pound. Imputed interest at 6 percent amounted to 0.432 cent per pound. 1/ Table 25a also shows certain details regarding the operations of the mills covered by the cost inquiry.

1/ For a discussion of the significance of costs exclusive of interest see Part IV of this report.

Table 25. - Hawaiian raw sugar: Costs of production f.o.b. mill

(All figures in cents per pound of 96 degree sugar produced, except as indicated)

	1929-30	1930-31	1931-32	Simple average 3 years
Cane, ground - tons:				
Company-grown cane	6,581,295	7,106,154	7,427,967	
Purchased from tenants	589,670	715,372	648,609	
Purchased from others	326,835	264,196	311,562	
Total	7,497,800	8,085,722	8,388,138	
Costs on basis of cost of production of cane				
Cost of production of cane (table 24)				
Per ton of cane 1/	$5.893	$5.543	$5.206	$5.547
Per pound of sugar (cents)	2.499	2.324	2.192	2.338
Transportation of cane	.165	.158	.137	.153
Factory operations -				
Mill expense	.128	.119	.111	.120
Packing cost	.110	.098	.075	.094
Repairs and maintenance	.086	.069	.057	.071
Taxes	.036	.031	.029	.032
Depreciation	.088	.081	.076	.082
General and administrative	.042	.040	.038	.040
Total factory operations	.490	.438	.386	.439
Total gross cost	3.154	2.920	2.715	2.930
Less - Sundry revenue	.002	.002	.002	.002
Molasses credit	.064	.029	.006	.033
Net cost	3.088	2.889	2.707	2.895
Imputed interest on investment in transportation equipment and factory at 6%	.086	.078	.074	.079
Total cost at factory including interest	3.174	2.967	2.781	2.974
Costs on basis of price paid for purchased cane				
Cost of company-grown cane, per ton	$5.893	$5.543	$5.206	$5.547
Price paid for tenant cane, per ton	3.821	3.533	3.421	3.592
Price paid for other purchased cane, per ton	3.855	3.613	3.348	3.605
Weighted average, per ton	5.641	5.302	4.999	5.314
Equivalent, cents per pound of sugar	2.392	2.223	2.105	2.240
Add other charges on tenant cane, per pound of sugar	.071	.068	.056	.065
Total cost (including interest) of sugar on this basis, f.o.b. factory	3.138	2.934	2.750	2.941

1/ Based on cost of company cane only; includes imputed interest on investment at 6 percent.

Table 25a. - Hawaiian cane sugar: Costs of production of raw sugar, excluding and including interest on investment in cane production and milling, together with operating statistics of mills

Costs without interest exclude interest paid on borrowed money as well as on capital owned. Imputed interest taken at 6 percent of total investment, including that financed by borrowing.

(Cents per pound of sugar, except as indicated)

	1929-30	1930-31	1931-32	Simple average 3 years
Costs without interest -				
Production of cane (table 24) per ton 1/	$5,005	$4.697	$4.430	$4.711
Equivalent per pound of sugar obtained - cents	2.122	1.969	1.865	1.985
Transportation of cane and factory operations, less molasses credit (table 25)	.589	.565	.515	.557
Total cost f.o.b. sugar mill	2.711	2.534	2.380	2.542
Imputed interest, at 6 percent on investment in -				
Production of cane, per ton 1/	$0.888	$0.846	$0.776	$0.8337
Equivalent per pound of sugar - cents	.377	.355	.327	.353
Transportation (by company railways) and milling	.086	.078	.074	.079
Total	.463	.433	.401	.432
Costs including imputed interest -				
Cane production	2.499	2.324	2.192	2.338
Transportation and milling	.675	.643	.589	.636
Total f.o.b. mill	3.174	2.967	2.781	2.974
Costs delivered to Hawaiian ports -				
Without interest	2.793	2.619	2.460	2.624
With imputed interest	3.256	3.052	2.861	3.056
Costs delivered to United States ports -				
Without interest	3.007	2.845	2.709	2.854
With imputed interest	3.470	3.278	3.110	3.286
Operating statistics				
Number of mills costed	38	38	36	
Production of sugar by all Hawaiian mills, 1,000 pounds	1,849,996	1,992,578	2,050,704	
Production by mills costed (equivalent as 96° sugar) 1,000 pounds	1,768,179	1,928,486	1,991,944	
Percent of total	95.6	96.8	97.1	
Total cane ground by mills, costed, tons	7,497,800	8,085,722	8,388,138	
Yield of sugar (96° basis) per ton of cane ground, pounds	235.8	238.5	237.5	
Production of molasses, gallons	37,938,868	43,096,898	40,934,113	
Per ton of cane -				
Gallons	5.06	5.33	4.88	
Equivalent pounds	59.20	62.36	57.10	
Value of molasses per gallon, net, cents 2/	3.00	1.33	0.29	

1/ See footnote to table 25.

2/ This figure represents value of quantity sold divided by total quantity produced. As a matter of fact large quantities of waste molasses are applied to the fields for fertilizing purposes for which no value has been assigned.

Cuban Raw Sugar

Costs of production of company-grown sugar cane and costs of operation of sugar mills in Cuba were obtained by the Commission for the three crop years 1929-30, 1930-31, and 1931-32. Costs of production of sugar cane by the colonos or independent farmers were obtained only for the last two of these years, and for the purpose of determining the cost of sugar in 1929-30 it was assumed that the cost of production of colono cane in that year bore the same relation to its cost in 1930-31 as was shown in the case of company-grown cane.

Costs of production of sugar cane

Between one fourth and one fifth of the sugar cane ground by the mills from which costs were obtained by the Commission was company-grown cane and for this cane detailed costs of production were available in the records of the companies. The tonnage of cane harvested by the companies for which costs were obtained was equal to about 11 percent of the total tonnage of cane (including colono-grown cane) harvested in Cuba during 1929-30, 14 percent in 1930-31, and 13 percent in 1931-32.

There are a large number of colonos engaged in the production of sugar cane in Cuba and few of them have accurate records of costs. The agents of the Commission obtained cost data from 370 colono farms for the year 1930-31 and 367 for the year 1931-32, these farms producing roughly one sixteenth of the total output of all colono farms in Cuba.

The year 1929-30 in Cuba was approximately normal as regards the methods of production of sugar cane and the yields per acre. The conditions in the last two years were decidedly abnormal. Owing to the reduced demand for Cuban sugar a large fraction of the acreage in cane remained unharvested in both these years. The production of sugar cane in Cuba is not a year-by-year enterprise in which the crop harvested during each year represents plantings of that year. Cane once planted continues to produce for a number of years and, consequently, it is not possible when demand falls off to reduce promptly the amount grown, but a large part of the cane remains unharvested.

On the company farms covered by the Commission's investigation the area harvested in 1929-30 was equal to about 97 percent of the total area in cane but in 1930-31 the proportion fell to about 57 percent and in 1931-32 to less than 40 percent. Approximately similar ratios appear in the case of colono cane.

Table 26 shows data with respect to the operations of colono farms in 1930 and 1931.

Table 26. - Cuban sugar cane: Operations of colono farms covered in cost inquiry

	1930-31	1931-32
Number of areas studied	15	15
Farms covered by cost inquiry -		
Number	370	367
Acres in sugar cane	130,630	124,247
Total acreage of cane on colono farms, Cuba	2,013,035	1,709,706
Percentage covered by cost inquiry	6.4	7.3
Yield per acre (tons) -		
Average for all colono cane, including unharvested	17.20	20.15
Farms covered by cost inquiry, including unharvested	17.34	18.26
Farms covered by cost inquiry -		
Acres of cane grown -		
Plant cane (planted same year as harvested)	13,146	7,003
Stubble cane (planted in previous years) 1/	116,344	62,359
Left-over cane not harvested in previous year	1,140	54,885
Total	130,630	124,247
Production, including unharvested (tons)	2,382,823	2,425,639
Acres of cane harvested -		
Plant cane	8,481	3,773
Stubble cane	57,478	21,366
Left-over cane from previous years	312	21,777
Not specified 2/	2,092	21,669
Total	68,363	68,585
Cane harvested (tons)	1,332,985	1,388,198
Percent of total crop harvested -		
Acres	52.3	55.2
Production	55.9	57.2

1/ Cane which had also been harvested in the immediately preceding year.
2/ One area in 1930-31 and four areas in 1931-32.

Since certain important items of expense in the production of sugar cane in Cuba are independent of the harvesting or the non-harvesting of the cane, the average cost of production when computed on the basis of the quantity of cane harvested was during 1930-31 and 1931-32 much higher than would have been the case with normal harvesting of the crop. The Commission has undertaken to determine what would have been the cost of production if all of the cane had been harvested during these years. For this purpose the costs of harvesting that part of the crop which was not in fact harvested were added to the actual costs, on the assumption that the cost per ton would have been the same as for that part of the crop actually harvested. Moreover, in the case of the 1931-32 season, when much of the production was from cane which had been left uncut in 1930-31, an estimate was made of what it would have cost to cultivate this cane if it had been actually the growth, from stubble, of 1931-32; this was done by applying to the left-over cane the average cultivation cost of the stubble cane actually cultivated during that season. The total costs of production, including these estimated figures for the cost of harvesting unharvested cane and cultivating left-over cane, were then divided by the total production including the production unharvested.

Attention is also called to the fact that, following the sharp drop in the price of sugar and in the demand for Cuban sugar, the wages of sugar labor in Cuba fell markedly from year to year during the period covered by the cost comparison. This is indicated, for example, by the fact that the cost of harvesting company-grown cane was 88 cents per ton in 1929-30, 51 cents in 1930-31 and 35 cents in 1931-32. Costs of

production of sugar cane, computed on the basis of total production, including that unharvested, consequently fell to a point much below what had prevailed during earlier years.

Table 27 shows by items the cost of production of sugar cane, computed on the basis of the total crop whether harvested or not, on colono farms during the two years for which these data were obtained. The figures by districts are simple averages of the farms within each district, and the general totals are weighted averages of the district figures. The average cost per acre in 1930-31 was $28.20, the yield per acre 17.34 tons, and the cost per ton $1.62. The corresponding figures for 1931-32 were $22.32 per acre, 18.26 tons per acre, and $1.22 per ton. These costs include imputed interest on investment.

Table 27. - Sugar cane: Cost of production in Cuba on farms of colonos, on basis of total quantity grown, including unharvested cane

Cost item	1930-31	1931-32	1930-31	1931-32
	Cost per acre		Cost per cab 1/	
Cultivation	$6.55	$3.96	$218.33	$132.00
Harvesting	10.27	8.19	342.33	273.00
Supervision	3.19	2.35	106.33	78.33
Taxes	.29	.30	9.67	10.00
Development	4.70	4.69	156.67	156.33
Miscellaneous	.71	.35	23.67	11.67
Total without land charge	25.71	19.84	857.00	661.33
Land charge (imputed interest on investment at 6 percent)	2.49	2.48	83.00	82.67
Total with land charge	28.20	22.32	940.00	744.00
	Tons	Tons	Arrobas	Arrobas
Yield per acre and per cab 1/	17.34	18.26	46.240	48,694
	Cost per ton		Cost per 100 arrobas	
Average cost of all areas without interest	$1.476	$1.086	$1.871	$1.377
Imputed interest	.144	.136	.183	.172
Average cost including interest	1.620	1.222	2.054	1.549
Cost by areas, including imputed interest 3/				
San Cristobal and Mercedita	1.56	1.13	1.95	1.41
Hershey	1.95	1.89	2.44	2.37
Gomez-Mena	1.90	1.71	2.38	2.14
Tinguaro	1.71	1.23	2.14	1.54
Cuba	1.65	1.25	2.07	1.56
Hormiguero	1.65	1.14	2.06	1.43
Resulta	1.64	1.28	2.05	1.60
Tuinicu	1.73	1.21	2.16	1.52
Cunagua	1.33	.95	1.66	1.18
Stewart	1.47	1.07	1.84	1.34
Vertientes	1.45	1.00	1.81	1.25
Francisco	1.52	1.04	1.90	1.30
Chaparra	1.81	1.25	2.27	1.56
San German	1.60	1.06	2.00	1.33
Soledad	1.47	1.30	1.84	1.62

1/ Cab = 33.0494 acres.
2/ Arroba = 25.3575 pounds.
3/ It should be observed that these costs are not for individual companies, but are averages for many farms in each area.

Table 28 shows the costs of production of company-grown cane, on the basis of the total crop including cane not harvested, during the three years for which these data were obtained. It will be seen that the average cost per ton was $2.90 in 1929-30, $2.12 in 1930-31, and $1.53 in 1931-32, the simple average for the three years being $2.18.

Table 28.- Cuban sugar cane: Cost of production of company-grown cane on basis of total quantity grown, whether or not harvested

All averages are weighted by the consumption of cane of the given company farm by reporting sugar mills.

	1929-1930	1930-1931	1931-1932
Acres -	330,949	386,171	364,775
Cane, tons -	5,416,918	6,792,790	6,784,359
Yield per acre, tons -	16.4	17.6	18.6
Costs per acre -			
Cultivating	$8.70	$6.02	$3.24
Harvesting (area harvested)	13.42	8.99	6.47
Supervision	2.32	1.92	1.45
Repairs to buildings and equipment	1.01	.75	.27
Livestock expense	1.17	.90	.62
Insurance and taxes	.52	.38	.30
Depreciation of buildings and equipment	1.75	1.54	1.34
Amortization of cane plantings	6.64	5.91	5.39
General and administrative expense	2.94	2.80	2.31
Other	1.12	.66	.39
Total	39.59	29.87	21.78
Imputed interest on capital invested, at 6 percent	7.90	7.34	6.66
Total cost, including interest, per acre	47.49	37.21	28.44
Cost per ton, without interest	2.418	1.698	1.171
Imputed interest at 6 percent	.483	.417	.358
Total cost per ton, including interest	2.901	2.115	1.529
Average cost by provinces per ton, including imputed interest			
Pinar Del Rio	2.677	1.889	1.392
Havana	3.060	2.119	1.787
Matanzas	2.987	2.174	1.553
Santa Clara	3.031	2.069	1.538
Camaguey	3.094	2.037	1.318
Oriente	2.707	2.224	1.815

Costs of production of sugar

The total number of mills grinding sugar in Cuba was 157 in 1929-31, 140 in 1930-31 and 132 in 1931-32. Costs were obtained by the Commission from more than half of these mills, the number covered for the three years being, respectively, 78, 78 and 71. The mills from which costs were obtained accounted for 67.5 percent of the total production of raw sugar in Cu a during the first of these years, for 72.8 percent during the second, and for 71.7 percent during 1931-32. Table 29 shows general statistics of operations of the mills covered by the cost investigation.

Table 29. - Cuban raw sugar: Data regarding operations of mills covered by the cost investigation

	1929-30	1930-31	1931-32
Number of raw sugar mills -			
Total operating in Cuba	157	140	132
Covered by cost investigation	78	78	71
Production of raw sugar (1000 pounds)-			
Total all mills	10,463,622	6,993,696	5,787,862
Mills covered by cost investigation	7,157,819	5,158,949	4,244,185
Percent of total	67.5	72.8	71.7
Mills covered by cost investigation -			
Quantity of cane ground, tons			
Company grown	5,256,739	4,329,413	3,558,536
Purchased from colonos	23,662,480	16,451,298	14,538,464
Total	28,919,219	20,780,711	18,097,000
Yield of sugar per ton of cane, pounds	247	248	234
Quantity of molasses produced,1000 gallons	138,635	91,076	99,572
Yield of molasses per ton of cane -			
Gallons	4.8	4.4	5.5
Equivalent, pounds	56.2	51.5	64.4
Unit value of molasses, per gallon, cents	.074	.023	.023

The same method of calculating depreciation and repairs as items in cost of sugar-mill operations was used for Cuba as for beet-sugar factories in the United States (see page 46).

Table 30 shows the costs of production (including imputed interest on investment in cane production and in sugar mills) of raw sugar in Cuba during the three years covered by the investigation, on the basis of the production cost for company-grown cane and colono cane as presented in preceding tables. The total cost f.o.b. factory, as thus computed was 1.80 cents per pound in 1929-30, 1.73 cents in 1930-31, and 1.50 cents in 1931-32, the simple average for the three years being 1.68 cents.

The price paid by the sugar mills for cane purchased from the colonos was during each of the three years considerably less than the cost of production of the cane. On the basis of the price so paid for colono cane and of the cost of production of company-grown cane, the average cost of raw sugar in Cuba f.o.b. factory was 1.65 cents in 1929-30, 1.72 cents in 1930-31, and 1.43 cents in 1931-32.

Table 30a shows costs of production of sugar in Cuba, excluding interest on investment both in the production and the milling of cane, together with the amount of imputed interest. It appears that for the 3-year period the average cost of producing sugar, f.o.b. mill, exclusive of interest, was 1.333 cents per pound, and the item of imputed interest, at 6 percent, amounted to 0.343 cent per pound. 1/

1/ For a discussion of the significance of costs exclusive of interest, see part IV of this report.

Table 30. - Cuban sugar: Cost of raw sugar f.o.b. mill

(All cost items in cents per pound of 96 degree sugar, except as indicated)

	1929-30	1930-31	1931-32	Simple average 3 years
Cane data				
Tons of cane grown -				
Company-grown cane	5,256,739	4,329,413	3,558,536	
Cane purchased from colonos	23,662,480	16,451,298	14,538,464	
Total	28,919,219	20,780,711	18,097,000	
Percent company cane	18.18	20.83	19.66	19.56
Percent colono cane	81.82	79.17	80.34	80.44
Cost of production of cane (based on total production, including unharvested) per ton 1/ -				
Company cane	$2.899	$2.136	$1.536	$2.190
Colono cane (table 27)	2.280	1.620	1.222	1.707
Weighted average	2.388	1.727	1.283	1.799
Per pound of sugar derived, cents	.967	.696	.547	.737
Costs on basis of cost of production of cane				
Cost of cane (cost of production as above)	.967	.696	.537	.737
Other cane costs	.036	.035	.029	.033
Total	1.003	.731	.576	.770
Transportation of cane 2/ -				
Company railway operations	.097	.087	.073	.086
Depreciation on railway plant	.045	.069	.065	.056
Freight paid on other cane	.025	.032	.031	.029
Total	.167	.178	.169	.171
Factory operations -				
Mill expense	.119	.103	.088	.104
Packing cost	.086	.074	.060	.073
Repairs and maintenance	.071	.060	.043	.058
Taxes	.048	.053	.051	.051
Insurance	.011	.015	.013	.013
Depreciation	.123	.171	.181	.158
General and administrative	.100	.119	.085	.101
Total factory operations	.558	.595	.521	.558
Total gross cost	1.728	1.504	1.266	1.499
Less credits for -				
Molasses	.143	.041	.054	.079
Sundry income	.005	.009	.009	.008
Net cost	1.580	1.454	1.203	1.412
Imputed interest on investment in transportation equipment and factory, at 6 percent	.216	.279	.296	.264
Total factory cost (including interest) on basis of cost of production of cane	1.796	1.733	1.499	1.676
Cost on basis of price paid for purchased cane				
Price paid for cane purchased from colonos, per ton	$1.702	$1.399	$0.818	$1.306
Cost of cane to mills - on basis of cost of production of company-grown and price paid for purchased cane - cents per pound of sugar	.775	.626	.409	.603
Other charges on colono cane produced on company land	.042	.058	.073	.058
Total factory cost on basis of price paid for cane (including interest)	1.646	1.721	1.434	1.600

1/ Figures differ slightly from those in table 28 because weighted according to consumption by sugar mills of the cane produced by each company, where in table 28 averages are weighted by production of cane.

2/ All items computed by dividing expenditure by total pounds of sugar, although each item actually incurred with reference to only part of the cane.

Table 30a.- Cuban cane sugar: Costs of production of raw sugar excluding and including interest on investment in cane production and milling

Costs without interest exclude interest on borrowed money as well as on capital owned. Imputed interest taken at 6 percent of total investment including that financed by borrowing

(Cents per pound of sugar, except as indicated)

	1929-30	1930-31	1931-32	Simple average 3 years
Costs without interest:				
Production of cane, per ton -				
Company-grown (table 28)	$2.415	$1.703	$1.188	$1.769
Colono-grown (table 27)	$2.149	$1.476	$1.086	$1.570
Weighted average	$2.193	$1.524	$1.108	$1.608
Equivalent per pound of sugar obtained - cents	.888	.614	.472	.658
Other cane costs	.036	.035	.029	.033
Transportation of cane and factory operations, less molasses credit (table 30)	.577	.723	.627	.642
Total cost f.o.b. sugar mill	1.501	1.372	1.128	1.333
Imputed interest, at 6%, on investment in -				
Production of cane, per ton -				
Company-grown	$0.484	$0.433	$0.348	$0.422
Colono-grown	$0.131	$0.144	$0.136	$0.137
Weighted average	$0.195	$0.203	$0.175	$0.191
Equivalent per pound of sugar, cents	.079	.083	.075	.079
Transportation (by company railways) and milling	.216	.279	.296	.264
Total	.295	.362	.371	.343
Cost including interest:				
Production of cane, average	.967	.696	.547	.737
Other cane costs	.036	.035	.029	.033
Transportation and milling less molasses credit	.793	1.002	.923	.906
Total, f.o.b. mill	1.796	1.733	1.499	1.676
Costs delivered to Cuban ports -				
Without interest	1.620	1.492	1.235	1.448
With imputed interest	1.915	1.854	1.606	1.791
Costs delivered to United States ports-				
Without interest	1.765	1.618	1.359	1.580
With imputed interest	2.060	1.980	1.730	1.923

Cost of Refined Sugar Produced from Cuban Raw Sugar

In order that the costs of Cuban sugar may be compared with the costs of beet sugar, in connection with the determination of the rate of duty on raw sugar, it is necessary to ascertain the cost of Cuban sugar when converted to the refined form, in which it competes with beet sugar, which is a refined product. This cost comparison is independent of that made in Part II of this report, which has to do with the relative costs of refined sugar produced in Cuba and of refined sugar produced from raw cane sugar in continental United States, with a view to determining the proper differential between the duty on raw and the duty on refined sugar. Beet sugar competes with refined Cuban cane sugar whether it is refined in Cuba or in the United States. The present section therefore deals with the costs of refined sugar produced, from Cuban raw sugar, both in Cuba and in the United States itself.

Costs of sugar refined in the United States

In order to determine the cost of sugar refined from Cuban raw sugar in continental United States it is necessary to add to the factory cost of raw sugar in Cuba, as shown in table 30, (a) the cost of transportation from Cuban raw-sugar mills to Cuban ports, (b) the cost of transportation from Cuban ports to refining ports in the United States, and (c) the cost of refining in the United States.

Transportation to Cuban ports. - The cost of transportation from raw-sugar mills in Cuba to Cuban ports was obtained directly from the records of the sugar mills. It averaged 11.94 cents per 100 pounds in 1929-30, 12.06 cents in 1930-31 and 10.69 cents in 1931-32.

Transportation to United States ports.- The refineries in the United States which handle Cuban raw sugar are all situated at tidewater in major seaport cities of the Atlantic and Gulf Coasts. The freight rates from Cuba to these cities (Boston, New York, Philadelphia, Baltimore, Savannah and New Orleans) are all substantially the same and the rates to New York may be taken as representative. These rates were ascertained in part from the books of the sugar refining companies and in part from the records of ocean carriers.

The average ocean transportation rate for raw sugar from Cuban ports to New York was found to be 14.5 cents per 100 pounds of raw sugar in 1929, 12.6 cents in 1930 and 12.4 cents in 1931.

Cost of refining in the United States.- Practically all the Atlantic and Gulf Coast sugar refineries handle not only Cuban sugar but also insular sugar, and New Orleans refineries handle likewise Louisiana raw sugar. No separate records are kept of the costs of refining the raw sugar from different sources. However, for raw sugar of a given centrifugal test the cost of refining is almost precisely the same from whatever source the sugar may be drawn. The average refining costs for all sugar at Atlantic and Gulf Coast refineries may be taken as the cost of refining Cuban raw sugar.

The costs of refining are given in detail in part II of this report. The costs are in terms of refined sugar and averaged 68.7 cents in 1929 per 100 pounds, 67.2 cents in 1930, and 61.9 cents in 1931.

Total cost of sugar refined in the United States from Cuban raw sugar.- It requires 107 pounds of 96 degree raw sugar to produce 100 pounds of refined sugar. It is necessary, therefore, in determining the costs of 100 pounds of refined sugar derived from Cuban raw sugar, to take the cost of production and transportation of 107 pounds of raw sugar plus the cost of refining. The items entering into this total cost are summarized in table 31. This shows that the total cost of sugar refined in the United States from Cuban raw sugar (made up of the cost of production of sugar cane, the cost of conversion into raw sugar, the cost of transportation to the United States, and the cost of refining in the United States) was 2.812 cents per pound of refined sugar in 1929, 2.718 cents in 1930 and 2.424 cents in 1931. These costs include imputed interest, at 6 percent, on investment in all stages of production.

Cost of sugar refined in Cuba

Table 31 shows also the cost f.o.b. factory of refined sugar produced in Cuba. It includes items of the same character as those for Cuban sugar refined in the United States, except, of course, that there is no item of freight from Cuban ports to the United States refineries. The cost of production of raw sugar used in the computation is the same as in the case of the sugar refined in the United States. It will be seen that the total cost of 100 pounds of refined sugar f.o.b. Cuban refineries was 2.611 cents per pound in 1929-30, 2.455 cents in 1930-31, and 2.154 cents in 1931-32; these costs also include imputed interest.

Table 31. -- Refined sugar produced from Cuban raw sugar: Cost of production of sugar refined in the United States and refined in Cuba, f.o.b. refinery 1/

Crop year	1929-30	1930-31	1931-32	Simple average
Sugar refined in United States:				
Per 100 lbs. raw sugar -				
Cost of production of raw sugar, f.o.b. cane mills in Cuba (table 30)	$1.796	$1.733	$1.499	$1.676
Cost of transportation from factory to Cuban ports	.119	.120	.107	.115
Cuban ports to Atlantic and Gulf coast refineries in United States	.145	.126	.124	.132
Total cost at refineries	2.060	1.979	1.730	1.923
Equivalent cost of 107 pounds of raw sugar required to produce 100 pounds of refined sugar	2.204	2.119	1.851	2.058
Less: bag and molasses credit	.079	.073	.046	.066
Net cost 107 pounds of raw sugar	2.125	2.046	1.805	1.992
Averaged cost of refining at Atlantic and Gulf coast refineries per 100 pounds of refined sugar (see table 55)	.687	.672	.619	.659
Total cost of 100 pounds of refined sugar f.o.b. U.S. refineries	2.812	2.718	2.424	2.651
Sugar refined in Cuba:				
Per 100 lbs. of raw sugar -				
Cost of production of raw sugar as above	1.796	1.733	1.499	1.676
Cost of transportation to refineries in Cuba	.089	.075	.079	.081
Total at refineries	1.885	1.808	1.578	1.757
Equivalent cost of 107 pounds of raw sugar required to produce 100 pounds of refined sugar	2.017	1.935	1.688	1.880
Less: bag and molasses credit	.059	.074	.042	.058
Net cost 107 pounds of raw sugar	1.958	1.861	1.646	1.822
Average cost of refining in Cuba per 100 pounds of refined sugar (table 55)	.653	.594	.508	.585
Total cost of 100 pounds of refined sugar f.o.b. Cuban refineries	2.611	2.455	2.154	2.407

1/ All items of cost of production and refining include imputed interest on investment at 6 percent.

Note: For transportation charges from refineries to interior markets in the United States, see table 39.

Transportation Costs and Total Delivered Costs for Raw Sugar

Cost comparisons under section 336 of the Tariff Act of 1930 include not only the cost of production but the cost of transportation and delivery to the principal markets in the United States.

Principal markets

Practically the only markets for raw sugar in the United States are the sugar refineries. All of these are situated on tidewater in major seaports of the Atlantic, Gulf and Pacific coasts, namely, Boston, New York, Philadelphia, Baltimore, Savannah, New Orleans, Galveston, and San Francisco. Neither for raw sugar produced in continental United States and in Hawaii nor for Cuban raw sugar are there any costs of delivery to market in the United States other than transportation and lighterage.

Information was obtained directly from the records of all the important refineries in the United States regarding the sources of the raw sugar used by them, and it was possible to determine accurately from these data what were in fact the principal markets for the raw sugar of each source. These data, however, cannot be published, as to do so would in some cases disclose the operations of individual concerns. The evidence from these records is confirmed by the table (table 14) showing the statistics of imports of dutiable sugar (practically all Cuban), and the receipts of Hawaiian sugar, in the principal customs districts of the United States; in all cases the raw sugar is refined in the customs district where it is first received. The figures of imports of dutiable sugar in this table include refined sugar and the position of certain of the customs districts in the imports of raw sugar differs considerably from their position in respect to combined imports of raw and refined sugar.

The principal markets for Cuban raw sugar are New York, Philadelphia, Boston, Baltimore, Savannah, and New Orleans. The freight rates from Cuban ports to these cities are all practically the same.

The principal markets for Hawaiian raw sugar are San Francisco and New York. Practically the only market for Louisiana raw sugar is New Orleans.

Transportation costs and total costs delivered at refineries

Transportation costs on raw sugar from the several producing areas compared to the principal markets in the United States were obtained chiefly from the records of the producers of raw cane sugar or of the refiners of cane sugar and were confirmed by data obtained from transportation companies. The transportation costs for Louisiana raw sugar comprise a single item only - direct transportation from the raw-sugar mill to New Orleans. The transportation costs for Hawaiian sugar include rail or truck hauling from the sugar mills to the insular ports and ocean transportation to San Francisco or New York. The costs for Cuban sugar include, similarly, the haul to the ports and the ocean transportation.

Table 32 shows the average transportation costs for Louisiana, Hawaiian, and Cuban raw cane sugar to refineries in the United States, together with the costs of production of the raw sugar, as set forth in previous tables, and the total delivered costs. For the three years taken together (simple average) the respective transportation costs were 0.139 cent per pound for Louisiana, 0.312 cent for Hawaiian, and 0.247 cent for Cuban raw sugar. Adding these transportation costs to the costs of production gives a total cost, delivered at United States refineries, of 4.646 cents per pound for Louisiana, 3.286 cents for Hawaiian, and 1.923 cents for Cuban sugar.

Table 32. - Raw cane sugar: Costs of transportation to principal refining points in United States and total delivered costs at such points 1/

(Cents per pound)

	1929	1930	1931	Simple average
Louisiana raw sugar:				
Transportation from raw sugar mills to New Orleans	0.147	0.132	0.120	0.133
Cost of production at raw sugar mills	5.020	4.247	4.273	4.513
Total cost at New Orleans	5.167	4.379	4.393	4.646
Hawaiian raw sugar:				
Transportation,				
From raw sugar mills to Hawaiian ports	.082	.085	.080	.082
From Hawaiian ports to refineries in continental United States, weighted average	.214	.226	.249	.230
Cost of production at raw sugar mills	3.174	2.967	2.781	2.974
Total delivered costs	3.470	3.278	3.110	3.286
Transportation from Hawaii to principal individual ports included in above average				
San Francisco	.195	.195	.195	.195
Gulf and Atlantic coast refineries	.380	.386	.351	.372
Percentage shipped to -				
San Francisco	89.70	83.62	65.13	-
Gulf and Atlantic coast	10.30	16.38	34.87	-
Cuban raw sugar:				
Transportation,				
From raw sugar mills to Cuban ports	0.119	0.120	0.107	0.115
From Cuban ports to New York	.145	.126	.124	.132
Cost of production at raw sugar mills	1.796	1.736	1.499	1.676
Total cost at New York	2.060	1.979	1.730	1.923

1/ All costs of production include imputed interest at 6 percent on investment in production of cane and in sugar mills.

Transportation and Delivered Costs for Beet Sugar and Sugar Refined from Cuban Raw Sugar

Principal markets

The determination of the comparative cost of beet sugar and of Cuban sugar delivered to the principal markets in the United States involves an entirely different problem regarding transportation from that presented by the cost comparison for raw sugar. Refined sugar is consumed throughout the United States, roughly in proportion to the population. Since sugar is a commodity of relatively low value in proportion to its weight, the cost of transportation to consuming markets is a relatively large proportion of the total delivered cost and the selection of principal markets for the purpose of cost comparison affects materially the result of the comparison.

The sugar produced in each area supplying the United States market naturally tends to go to those parts of the country to which transportation charges from that area are lowest. Cuban sugar, whether refined in Cuba or at Atlantic and Gulf ports of the United States, naturally finds its most accessible markets in States bordering those coasts. The greater part of the beet sugar, on the other hand, is produced in the interior of the country, and since the output is only a part of the total requirements of the United States, very little of it is marketed in the Eastern and Southern States. Cuban sugar finds practically no market on the Pacific Coast, which is supplied by Hawaii and California beet sugar, nor in the Rocky Mountain region, which is the chief producer of beet sugar.

Table 33 shows for 1931 the quantities of beet sugar shipped to the several major consuming regions of the United States by the factories covered by the cost inquiry, and also the quantity of refined sugar shipped to the same regions by the Atlantic and Gulf coast refineries and Cuban refineries. The shipments of the Atlantic and Gulf coast refineries include not merely sugar refined from Cuban raw but also that refined from Louisiana and insular raw sugar, and the quantity of sugar originating in Cuba which was marketed in all of these regions was much less than here shown.

It will be seen that in 1931 nearly seven tenths of all the beet sugar produced in the United States was marketed in the interior valley region extending substantially from the Allegheny Mountains to the Dakotas, Nebraska, Kansas, and Texas. Practically all of the beet sugar produced in the Central States and more than three fourths of that produced in the Mountain States is marketed in this interior region. On the other hand, the beet sugar factories of the Pacific coast naturally sell the greater part of their product, about three fifths, on that coast and most of the remainder is shipped by water to the Atlantic Coast States, mostly for inland distribution.

Of the refined cane sugar produced on the Atlantic and Gulf coasts, about three fifths is consumed in the Atlantic Coast region, the proportion in the case of the sugar refined at Atlantic Coast ports rising to nearly four fifths. Naturally the Gulf Coast refineries (at New Orleans and Galveston) market chiefly in the Gulf Coast States and the interior valley states. For the Atlantic and Gulf Coast refineries together, the interior valley region furnished in 1931 a market for 28 percent of their output.

Table 33. - Beet sugar and sugar refined on Atlantic and Gulf Coasts
Shipments to the several consuming regions in 1931

Kind of sugar and source	Consuming regions					
	Total	Atlantic Coast States	Gulf Coast States	Interior Valley States	Mountain States	Pacific States
	Quantity in thousands of pounds					
Beet sugar, produced in-						
Central States	208,185	238	-	207,948	-	-
Mountain States	1,970,023	107,120	142,166	1,508,184	208,992	3,561
Pacific States	326,105	82,476	9,325	29,776	12,981	191,546
Total	2,504,313	189,834	151,491	1,745,908	221,973	195,107
Refined cane sugar from Cuba, Insular and domestic raw sugar, refined on -						
Atlantic Coast	5,776,000	4,513,761	86,086	1,174,824	673	656
Gulf Coast	1,730,548	60,962	709,887	955,901	3,798	-
Total	7,506,548	4,574,723	795,973	2,130,725	4,471	656
Refined sugar refined in:						
Cuba	693,371	462,434	113,660	106,077	-	11,200
	Percent of total					
Beet sugar, produced in-						
Central States	100	0.1	-	99.9	-	-
Mountain States	100	5.4	7.2	76.0	10.6	0.2
Pacific States	100	25.3	2.9	9.1	4.0	58.7
Total	100	7.6	6.0	69.7	8.9	7.8
Refined sugar refined in -						
Atlantic Coast	100	78.1	1.4	20.3	.1	.1
Gulf Coast	100	3.5	41.1	55.2	.2	-
Total	100	60.3	10.6	28.3	.7	.1
Refined sugar refined in:						
Cuba	100	66.7	16.4	15.3	-	1.6

In view of these facts with reference to the markets for beet sugar and sugar refined from Cuban raw sugar, the Commission has compared the cost of transportation of beet sugar to all the markets supplied by the beet sugar factories covered by the cost inquiry with the cost of transportation of sugar refined on the Atlantic and Gulf coasts, and in Cuba, to all the markets supplied with such sugar. In other words, the principal markets for each of the two kinds of sugar are taken as the actual markets supplied. The method of determining the costs of transportation is set forth in the following paragraphs.

Costs of transportation of beet sugar

From the records of each beet sugar factory covered by the cost inquiry (these factories accounted for over nine-tenths of the total production of beet sugar) the Commission ascertained the total quantity of sugar shipped during each year to all markets and also the total amount of freight paid on these shipments. From these data the average rate of freight for each factory was directly ascertained and a weighted average for all the factories was computed. The results are presented in Table 34. It will be seen that for the three years taken together the average cost of transportation of beet sugar to all the markets where it was sold was 0.496 cent per pound.

Table 34. - Beet sugar: Cost of transportation on all sugar shipped by factories costed

	Shipments	Total amount of freight paid	Average per pound
	(1000 pounds)		Cent
1929-30	1,765,104	$8,542,233	.484
1930-31	1,953,961	9,321,958	.477
1931-32	2,350,189	12,376,737	.527
Simple average rate			.496

Cost of Transportation of Sugar Refined from Cuban Raw Sugar

The cost of transporting sugar refined in the United States from Cuban raw sugar to the markets where it is sold was computed by the following method: Representative cities of destination, usually three in number, were selected for each State to which any shipments were made. The rates of freight to these cities from a given refining center, such as New York, were ascertained. The rates to the selected cities of a given State were combined into a simple average, on the assumption that this average would be more representative of the rates to the State as a whole than one weighted by the quantities shipped to the particular cities covered. The State rates from a given refining center, as thus ascertained, were combined into a general average by giving to each State a weight corresponding to the total shipments of refined sugar (whatever the origin of the raw sugar from which it was produced) into that State from the given refining center. Finally the averages for the rates from the several refining centers were combined into a general average for shipments from all Atlantic and Gulf coast refineries by giving to each refining center a weight corresponding to its production of refined sugar from Cuban raws. The quantities used as weights in these calculations cannot be published since in some cases this would involve the disclosure of the marketing operations of individual refineries. The rates from the several refining centers to the several States during 1931 are shown in table 35; they were practically the same in the other years covered; the table also shows the weighted average for each of the years.

For the sugar refined in Cuba the method of computing the average cost of transportation from the ports of entry to the markets actually supplied was similar to that set forth as regards the product refined in the United States. The same cities of destination (so far as any shipments of sugar refined in Cuba were made to them) were used and the rates to these cities from the several ports of entry which made shipments to them were ascertained. The general average is weighted according to the shipments of Cuban refined sugar to the respective States. The results of this calculation, which involve no disclosure of the business of individual concerns, are presented in table 36.

As in the case of beet sugar, no attempt was made to ascertain cartage charges from the railroad station to the places of business of the dealers. For this reason the transportation charge for all of the refining points and ports of entry for Cuban sugar, except New York, was taken as zero. In the case of the metropolitan district of New York the average cost of delivery from the refineries to the wholesale and other dealers was found to be 7 cents per 100 pounds, as compared with about 3 cents in most of the large cities of the country. It was assumed that 3 cents of this cost represented cartage charges and that the remainder represented either railway or water transportation within the metropolitan area.

It will be seen from tables 35 and 36 that for the three-year period taken together (simple average) the cost of transportation of sugar refined from Cuban raw sugar from the Atlantic and Gulf coast refineries to the markets supplied by them was 0.270 cent per pound, and the corresponding cost for the sugar refined in Cuba from the points of entry to the markets was 0.238 cent per pound.

States	New Orleans: Texas City and Sugarland
ds)	
New England States:	
Maine	-
New Hampshire	-
Vermont	-
Massachusetts	-
Rhode Island	-
Connecticut	-
Atlantic Coast States:	
New York, metropolitan area	-
New York, other	-
New Jersey, metropolitan ar	-
New Jersey, other	-
Pennsylvania	-
Delaware	-
Maryland	-
District of Columbia	-
Virginia	-
North Carolina	-
South Carolina	-
Georgia	.37
Florida	.30
Gulf States:	
Alabama	.33
Mississippi	.30
Louisiana	.18
Texas	.47
Northern interior states:	
Michigan	.49
Ohio	.45
Indiana	.45
Illinois	.45
Wisconsin	.49

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.63
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.67
.72

Table 35. Sugar refined from Cuban raw sugar: Transportation rates in 1931 from each refining center to representative cities throughout area in which sugar was sold

States	Representative cities to which freight rates were obtained			Refining centers				
				Boston	New York, Philadelphia and Baltimore	Savannah	New Orleans	Texas City and Sugarland
				(Per 100 pounds)				
New England States:								
Maine	Portland	Augusta	Bangor	$0.27	$0.27	-	-	-
New Hampshire	Portsmouth	Concord	Berlin	.23	.27	-	-	-
Vermont	White River Jnc.	Montpelier	St. Albans	.29	.27	-	-	-
Massachusetts	Boston	Fall River	North Adams	.14	.26	-	-	-
Rhode Island	Providence	Newport	Pawtucket	.16	.18	-	-	-
Connecticut	Hartford	New Haven	New London	.22	.16	-	-	-
Atlantic Coast States:								
New York, metropolitan area	-	-	-	-	.04	-	-	-
New York, other	Buffalo	Utica	-	.34	.26	-	-	-
New Jersey, metropolitan area	-	-	-	-	.04	-	-	-
New Jersey, other	Trenton	Atlantic City	-	-	.16	-	-	-
Pennsylvania	Philadelphia	Pittsburgh	Scranton	-	.20	-	-	-
Delaware	Wilmington	-	-	-	.13	-	-	-
Maryland	Baltimore	Cumberland	Salisbury	-	.16	-	-	-
District of Columbia	-	-	-	-	.14	-	-	-
Virginia	Norfolk	Richmond	Roanoke	-	.23	.23	-	-
North Carolina	Wilmington	Winston Salem	Charlotte	-	.30	.34	-	-
South Carolina	Charleston	Columbia	Greenville	-	.34	.25	-	-
Georgia	Savannah	Atlanta	Augusta	-	.22	.19	.37	-
Florida	Tampa	St. Petersburg	Daytona Beach	-	-	.27	.30	-
Gulf States:								
Alabama	Birmingham	Montgomery	Gadsden	-	.39		.33	-
Mississippi	Jackson	Hattiesburg	-	-	.30	-	.30	-
Louisiana	New Orleans	Baton Rouge	-	-	-	-	.18	-
Texas	Wichita Falls	Galveston	Dallas	-	-	-	.47	.35
Northern interior states:								
Michigan	Detroit	Grand Rapids	Saginaw	.43	.43	-	.49	.63
Ohio	Cleveland	Columbus	Cincinnati	.40	.40	.52	.45	-
Indiana	Fort Wayne	Indianapolis	Evansville	.51	.54	.54	.45	.67
Illinois	Chicago	Peoria	Springfield	.50	.50	.56	.45	.67
Wisconsin	Milwaukee	La Crosse	Madison	.52	.52	-	.49	.72
Minnesota	Twin Cities	Duluth	-	-	.60		.60	.67
Iowa	Desmoines	-	-	-	.64	-	.54	.65
North Dakota	Bismarck	-	-	-	.76	-	.76	.76
South Dakota	Pierre	-	-	-	.76	-	.76	.76
Nebraska	Lincoln	Omaha	-	-	.72	-	.55	.51
Southern interior states:								
West Virginia	Charlestown	Wheeling	Bluefield	-	.42	.50	-	-
Kentucky	Lexington	Louisville	Covington	-	.54	.51	.45	-
Tennessee	Knoxville	Nashville	Chattanooga	-	.42	.42	.42	-
Kansas	Wichita	Hutchinson	Topeka	-	.72	-	.55	.64
Missouri	St. Louis	Kansas City	-	-	-	-	.47	.61
Oklahoma	Oklahoma City	Tulsa	-	-	.85	-	.57	.55
Arkansas	Little Rock	-	-	-	.77	.43	.43	.50

Weighted averages - shipments to all areas: 1929, $0.271; 1930, $0.266; 1931, $0.272.
Simple average - three year period: $0.270.

Table 36.- Cuban r

States	freight rate cted cities 30-1931	1931-1932
	00 pounds)	
New England States:		
Massachusetts	0.140	$0.140
Connecticut	.220	.220
Atlantic Coast States:		
New York, metropolitan area	.040	.040
New York, other	.260	.260
New Jersey, metropolitan area	.040	.040
New Jersey, other	.160	.160
Pennsylvania	.200	.200
Delaware	.130	.130
Maryland	.160	.160
District of Columbia	.140	.140
Virginia	.145	.145
North Carolina	.190	.190
South Carolina	.180	.180
Georgia	.190	.190
Florida	.165	.165
Gulf Coast States:		
Alabama	.280	.280
Mississippi	.300	.300
Louisiana	.180	.180
Texas	.470	.470
Northern Interior States:		
Michigan	.430	.430
Ohio	.400	.400
Indiana	.450	.450
Illinois	.450	.450
Wisconsin	.490	.490
Minnesota	.600	.600
Iowa	.540	-
Nebraska	-	.550
Southern Interior States:		
West Vriginia	.420	.420
Kentucky	.450	.450
Tennessee	.420	.420
Missouri	.470	.470
Arkansas	-	.430
Weighted average	.225	.217

Table 36.- Cuban refined cane sugar: Cost of transportation from points of entry of Cuban refined sugar to representative cities throughout area in which sugar was sold

States	Representative cities to which freight rates were obtained			Shipments of Cuban sugar to the State			Average freight rate to selected cities		
				1929-1930	1930-1931	1931-1932	1929-1930	1930-1931	1931-1932
				(1000 pounds)			(Per 100 pounds)		
New England States:									
Massachusetts	Boston	Fall River	North Adams	320	162	100	$0.140	$0.140	$0.140
Connecticut	Providence	Newport	Pawtucket	80	105	1,232	.220	.220	.220
Atlantic Coast States:									
New York, metropolitan area	-	-	-	22,563	32,956	59,327	.040	.040	.040
New York, other	Buffalo	Utica	-	22,564	32,957	59,328	.260	.260	.260
New Jersey, metropolitan area	-	-	-	281	1,305	7,201	.040	.040	.040
New Jersey, other	Trenton	Atlantic City	-	282	1,306	7,201	.160	.160	.160
Pennsylvania	Philadelphia	Pittsburgh	Scranton	91,728	86,287	76,039	.200	.200	.200
Delaware	Wilmington			70	60	363	.130	.130	.130
Maryland	Baltimore	Cumberland	Salisbury	96,510	56,345	100,958	.160	.160	.160
District of Columbia				1,344	1,513	5,960	.140	.140	.140
Virginia	Norfolk	Richmond	Roanoke	22,751	25,811	59,267	.145	.145	.145
North Carolina	Wilmington	Winston Salem	Charlotte	8,770	7,484	19,326	.190	.190	.190
South Carolina	Charleston	Columbia	Greenville	10,860	16,931	28,926	.180	.180	.180
Georgia	Savannah	Atlanta	Augusta	39,067	37,440	34,944	.190	.190	.190
Florida	Tampa	St. Petersburg	Daytona Beach	26,869	27,116	32,055	.165	.165	.165
Gulf Coast States:									
Alabama	Birmingham	Montgomery	Gadsden	10,684	13,013	21,823	.280	.280	.280
Mississippi	Jackson	Hattiesburg		2,459	476	4,572	.300	.300	.300
Louisiana	New Orleans	Baton Rouge		10,367	29,702	43,903	.180	.180	.180
Texas	Wichita Falls	Galveston	Dallas	-	5,000	11,309	-	.470	.470
Northern Interior States:									
Michigan	Detroit	Grand Rapids	Saginaw	6,218	8,993	20,671	.430	.430	.430
Ohio	Cleveland	Columbus	Cincinnati	7,994	5,987	10,329	.400	.400	.400
Indiana	Fort Wayne	Indianapolis	Evansville	18,740	27,277	10,610	.450	.450	.450
Illinois	Chicago	Peoria	Springfield	11,376	21,343	20,376	.450	.450	.450
Wisconsin	Milwaukee	LaCrosse	Madison	-	4,830	15,688	-	.490	.490
Minnesota	Twin Cities	Duluth		-	140	420	-	.600	.600
Iowa	Des Moines			120	60	-	.540	.540	-
Nebraska	Lincoln	Omaha		-	-	60	-	-	.550
Southern Interior States:									
West Vriginia	Charleston	Wheeling	Bluefield	1,554	429	2,264	.420	.420	.420
Kentucky	Lexington	Louisville	Covington	10,014	4,451	6,883	.450	.450	.450
Tennessee	Knoxville	Nashville	Chattanooga	9,223	7,014	13,792	.420	.420	.420
Missouri	St. Louis	Kansas City		926	123	6,949	.470	.470	.470
Arkansas	Little Rock			-	-	300	-	-	.430
Weighted average				433,734	456,616	682,176	.216	.225	.217

Delivered costs

Table 37 shows the cost of beet sugar delivered to the principal markets, comprising the cost of production of sugar beets, the cost of manufacture of the sugar, and the cost of transportation to the markets. Similar data are shown for sugar refined in continental United States from Cuban raw sugar and for sugar refined in Cuba. In this table there appears, as regards sugar refined in Cuba, the item of cost of transportation from the Cuban refineries to Atlantic and Gulf ports of the United States, which is in addition to the transportation charges within the United States itself, shown in table 36. These costs of ocean transportation of Cuban refined sugar were obtained from the records of the Cuban refineries and checked by the records of transportation companies. They represent averages weighted according to the importance of the shipments to the several ports.

It will be seen that for the three years covered by the cost investigation the delivered costs for beet sugar were, respectively, 4.596 cents, 4.479 cents, and 4.198 cents per pound, the 3-year average being 4.424 cents. The corresponding averages for sugar refined in the United States itself from Cuban raw sugar were 3.083, 2.984, and 2.696 cents, respectively, and for sugar refined in Cuba, 3.134, 2.946, and 2.635 cents, respectively. These two sets of delivered costs for Cuban sugar have been combined into a weighted average. The weight assigned to the sugar refined from Cuban raw in the United States is the total quantities of refined cane sugar derived by United States refineries from Cuban raw sugar. The weight assigned to the sugar refined in Cuba itself is the total imports of refined sugar from Cuba. The weighted average cost, delivered to consuming markets, for all refined sugar derived from Cuban raw sugar was 3.086 cents per pound in 1929-30, 2.981 cents in 1930-31, and 2.688 cents in 1931-32, the 3-year average being 2.918 cents. The excess of domestic cost for the three years was thus 1.506 cents per pound of refined sugar, equal (dividing by 1.07) to 1.407 cents per pound of raw.

Table 37. - Beet sugar and sugar refined from Cuban raw sugar: Costs of transportation to and delivered costs at markets supplied by each kind of sugar 1/

(Cents per pound)

	1929-30	1930-31	1931-32	Simple average 3 years
U.S. refined beet sugar -				
Cost of production f.o.b. mills (table 18)	4.112	4.002	3.671	3.928
Cost of transportation from mills to principal markets supplied with beet sugar (table 34)	.484	.477	.527	.496
Total delivered cost	4.596	4.479	4.198	4.424
Refined sugar derived from Cuban raw sugar:				
A. Sugar refined in United States -				
Cost of refined sugar f.o.b. refineries (table 31)	2.812	2.718	2.424	2.651
Cost of transportation from Atlantic and Gulf coast refineries to principal markets supplied by such refineries	.271	.266	.272	.270
Total delivered cost	3.083	2.984	2.696	2.921
B. Sugar refined in Cuba -				
Cost of refined sugar f.o.b. refineries (table 31)	2.611	2.455	2.154	2.407
Cost of transportation from refineries to Atlantic and Gulf ports of U.S.	.307	.266	.264	.279
Total cost c.i.f. U.S. ports	2.918	2.721	2.418	2.786
Cost of transportation from such ports to principal markets supplied by Cuban refineries	.216	.225	.217	.219
Total delivered cost	3.134	2.946	2.635	2.905
Weighted average cost A and B -				
Production (including transportation of Cuban refined sugar to U.S. ports)	2.819	2.718	2.423	2.653
Transportation from Atlantic and Gulf points	.267	.263	.265	.265
Total	3.086	2.981	2.688	2.918
Excess of beet sugar costs over weighted average of Cuban sugar costs	1.510	1.498	1.510	1.506
Weights used in average of A and B above, i.e. total quantity of sugar refined from Cuban raws (1,000 pounds) -				
Refined in continental United States	5,850,714	4,985,073	4,120,424	-
Imported from Cuba	433,734	456,615	682,171	-

1/ All costs of production include imputed interest, at 6 percent, on investment in all stages of production.

In 1933, taking effect October 1, the freight rates on sugar were reduced very generally throughout the United States. The Commission has made a careful examination of these rate changes. It is found that they have affected beet sugar and refined cane sugar by substantially the same percentage - between 25 and 30 percent. Consequently, if present freight rates were substituted in tables 35, 36, and 37 the average rate for the beet sugar would be reduced by several cents per 100 pounds more than the average rates for sugar refined from Cuban raw sugar in the United States and in Cuba. The result would be to reduce the excess of domestic over Cuban costs as regards comparison between beet sugar and sugar refined from Cuban raw sugar and also somewhat to reduce the general average of excess of domestic costs over Cuban costs as shown in table 38.

Comparison of Domestic and Cuban Costs

Table 38 compares the domestic costs with the Cuban costs of sugar delivered to the principal markets as shown in tables 32 and 37, respectively. The table shows that on the average for the three years covered by the cost investigation the cost of Louisiana raw sugar exceeded that of Cuban raw sugar by 2.723 cents per pound, and the cost of Hawaiian raw sugar exceeded that of Cuban raw sugar by 1.363 cents per pound. The cost of one pound of refined beet sugar exceeded the cost of one pound of sugar refined from Cuban raw sugar by 1.506 cents; since it requires 1.07 pounds of raw sugar to produce one pound of refined sugar, this was equal to 1.407 cents per pound of raw sugar.

None of the three comparisons showed an excess of cost in any individual year covered by the inquiry widely different from the average for the 3-year period.

The cost differences shown by these three separate comparisons have been combined into a general average by assigning to them weights corresponding to the production of raw sugar in continental United States, the production of raw sugar in Hawaii, and the production of beet sugar in the United States, respectively. In other words, each comparison is given a weight corresponding to the importance of the given domestic source in supplying the markets of continental United States.

The weighted average excess of domestic costs thus computed was 1.570 cents per pound for 1929, 1.435 cents for 1930, and 1.481 cents for 1931. The simple average of these three figures is 1.495 cents.

The foregoing comparison of domestic and foreign costs of sugar is based upon the farm cost of production of cane or beets used as the raw material for producing sugar. The Commission also obtained the cost of producing sugar on the basis of the foreign cost of company-grown cane or beets and the price of the raw materials purchased from independent producers. The comparison of domestic and Cuban costs for the several areas is shown on this basis in table 39.

Table 38. - Comparison of domestic and Cuban delivered costs of sugar, on basis of farm costs of cane and beets

All raw sugar costs on basis of 96 degree sugar. All costs include imputed interest at 6 percent on investment in all stages of production

(Cents per pound)

	1929	1930	1931	Simple average
A. Raw sugar - Cuba vs. Louisiana -				
Louisiana sugar delivered at New Orleans	5.167	4.379	4.393	4.646
Cuban sugar delivered at Atlantic and Gulf coast refineries	2.060	1.979	1.730	1.923
Excess of domestic cost	3.107	2.400	2.663	2.723
B. Raw sugar - Cuba vs. Hawaii -				
Hawaiian sugar delivered at refineries in United States	3.470	3.278	3.110	3.286
Cuban sugar delivered at Atlantic and Gulf coast refineries	2.060	1.979	1.730	1.923
Excess of domestic cost	1.410	1.299	1.380	1.363
C. Sugar refined from Cuban raw sugar vs. beet sugar				
Beet sugar delivered to all markets supplied by it - per pound refined sugar	4.596	4.479	4.198	4.424
Cuban sugar refined in United States and in Cuba, delivered to all markets supplied by it - per pound refined sugar	3.086	2.981	2.688	2.918
Excess of domestic cost - Per pound of refined sugar requiring 1.07 lbs. of raw cane sugar	1.510	1.498	1.510	1.506
Equivalent per pound of raw sugar	1.411	1.400	1.411	1.407
Weighted average excess of domestic costs per pound of raw sugar	1.570	1.435	1.481	1.495
Weights used in average, viz. total quantity (tons) of -				
A. Raw sugar produced in Louisiana	199,610	183,693	155,924	-
B. Raw sugar produced in Hawaii	924,998	996,289	1,025,352	-
C. Beet sugar produced in United States	1,009,919	1,204,771	1,148,243	-

Table 39. - Comparison of domestic and Cuban delivered costs of sugar, on basis of cost of company grown cane or beets plus price of purchased cane or beets

All raw sugar costs on basis of 96 degree sugar

(Cents per pound)

	1929	1930	1931	Simple average
A. Raw sugar - Cuba vs. Louisiana -				
Louisiana sugar delivered at New Orleans	4.457	3.992	4.081	4.177
Cuban sugar delivered at Atlantic and Gulf coast refineries	1.910	1.967	1.665	1.847
Excess of domestic cost	2.547	2.025	2.416	2.330
B. Raw sugar - Cuba vs. Hawaii -				
Hawaiian sugar delivered at refineries in United States	3.434	3.245	3.079	3.253
Cuban sugar delivered at Atlantic and Gulf coast refineries	1.910	1.967	1.665	1.847
Excess of domestic cost	1.524	1.278	1.414	1.406
C. Sugar refined from Cuban raw sugar vs. beet sugar -				
Beet sugar delivered to all markets supplied by it - per pound refined sugar	5.216	5.141	4.294	4.884
Cuban sugar refined in United States and in Cuba, delivered to all markets supplied by it - per pound refined sugar	2.926	2.967	2.618	2.837
Excess of domestic cost -				
Per pound of refined sugar requiring 1.07 lbs. of raw cane sugar	2.290	2.174	1.676	2.047
Equivalent per pound of raw sugar	2.140	2.032	1.566	1.913
Weighted average excess of domestic costs per pound of raw sugar	1.911	1.716	1.559	1.729
Weights used in average, viz. total quantity (tons) of -				
A. Raw sugar produced in Louisiana	199,610	183,693	155,924	-
B. Raw sugar produced in Hawaii	924,998	996,289	1,025,352	-
C. Beet sugar produced in United States	1,009,919	1,204,771	1,148,243	-

Adjustment of Duties by Degrees

An extreme interpretation of section 336 of the tariff act might be to the effect that the duty on each separate degree of sugar by polariscopic test is a separate duty and that the domestic and foreign costs of sugar of each separate degree must be separately compared. In view of the actual facts of the sugar industry, however, this would be an unreasonable interpretation. There is only insignificant production or importation of sugar of less than 95 degree test and it would be quite impossible to obtain costs of production of sugar of these lower tests. Moreover, no sugar mill attempts to distinguish the costs of different degrees of sugar which it makes and any attempt to ascertain the cost of raw sugar for each degree from, say, 95 to 98, would involve much purely arbitrary estimate. Under these circumstances, the Commission having ascertained the cost difference on 96 degree raw sugar, the only available course is to take this cost difference as showing the rate of duty required for 96 degree sugar, and to reduce the rates on sugar of all other degrees (except as modified by the investigation of refined sugar) by the same percentage as the rate on 96 degree sugar. This will be accomplished by reducing the differential for each sugar degree by that same percentage.

The rates of duty on sugar as expressed in the statute, and as they must be expressed in any Presidential proclamation, are those applicable to countries other than Cuba, which are 25 percent higher than the rates on Cuban sugar. The cost difference found relates to Cuban sugar. The procedure, therefore, is to reduce the rates of full duty by the percentage by

which the cost difference found falls below the present rate of duty on Cuban 96 degree sugar, namely, 25 percent (more precisely 25.2 percent). This percentage applied to the present full rate of duty of 2.5 cents per pound on 96 degree sugar gives 1.875 cents, and applied to the present full-duty differential of 0.0375 cent per pound for each degree gives 0.028125 cent, the differential for Cuban sugar being 0.0225 cent. The resulting rates for the several degrees, together with the corresponding rates on Cuban sugar under the 20 percent preference, are set forth in table 40, in comparison with the existing rates. The general rate for sugar not above 75 degrees becomes 1.284375 cents, equal to 1.0275 for such sugar imported from Cuba.

Table 40.- Present rates of duty on sugar and rates adjusted to the cost difference found in this investigation for raw sugar

(Cents per pound)

	Full-duty sugar		Cuban sugar at reduction of 20 percent	
	Present rate	Rate as found	Present rate	Rate as found
Rate on 96 degree sugar (basis of cost comparison)	2.5000	1.875	2.0000	1/ 1.50
Differential for each degree	.0375	.028125	.3000	.0225
Rate on sugar of -				
Not over 75 degrees	1.7125	1.284375	1.3700	1.0275
76 "	1.7500	1.312500	1.4000	1.0500
77 "	1.7875	1.340625	1.4300	1.0725
78 "	1.8250	1.368750	1.4600	1.0950
79 "	1.8625	1.396875	1.4900	1.1175
80 "	1.9000	1.425000	1.5200	1.1400
81 "	1.9375	1.453125	1.5500	1.1625
82 "	1.9750	1.481250	1.5800	1.1850
83 "	2.0125	1.509375	1.6100	1.2075
84 "	2.0500	1.537500	1.6400	1.2300
85 "	2.0875	1.565625	1.6700	1.2525
86 "	2.1250	1.593750	1.7000	1.2750
87 "	2.1625	1.621875	1.7300	1.2975
88 "	2.2000	1.650000	1.7600	1.3200
89 "	2.2375	1.678125	1.7900	1.3425
90 "	2.2750	1.706250	1.8200	1.3650
91 "	2.3125	1.734375	1.8500	1.3875
92 "	2.3500	1.762500	1.8800	1.4100
93 "	2.3875	1.790625	1.9100	1.4325
94 "	2.4250	1.818750	1.9400	1.4550
95 "	2.4625	1.846875	1.9700	1.4775
96 "	2.5000	1.875000	2.0000	1.5000
97 "	2.5375	1.903125	2.0300	1.5225
98 "	2.5750	1.931250	2.0600	1.5450
99 "	2.6125	1.959375	2.0900	1.5675
100 "	2.6500	1.987500	2.1200	1.5900

1/ Cost difference as found was 1.495; 1.500 is here used.

Changes in Costs of Production and Prices of Sugar in a Decade

The cost data given in the preceding tables have been based upon the three crop or fiscal years beginning in 1929 and ending in 1932. The Tariff Commission, however, has obtained data on the cost of producing sugar for many of the past 15 years. The cost for some of the years, especially those during and immediately following the war, are abnormal from many points of view but those for the two fiscal years 1921-23 have some significance for purposes of comparison with the cost of production obtained in the present investigation, the two periods being approximately ten years apart. It is also of interest to observe the changing prices in the 10-year period not only from the point of view of the absolute change in prices but also from the point of view of the relation of the cost of production and prices in the two cost periods.

In table 41 there are presented for Cuba the cost of production of sugar, f.o.b. mill, by principal items, the net receipts from the sale of sugar, and the margin or difference between unit costs and sales receipts per pound. For comparative purposes there is also shown the average prices of sugar, for each of the years for which the cost data are shown, in the markets and for the kind of sugar, whether raw or refined, most appropriate for comparison with the cost data. For example, the promedio price of Cuban sugar is used in the table showing Cuban mill costs and the New York refined sugar prices less 20 points, i.e. 20 cents per 100 pounds, is used in the table showing factory cost of refined beet sugar. There is also shown in the tables the average prices of sugar in 1912 and 1913 in order to give some impression of pre-war values as compared with the period immediately after the war and at the present time.

Table 42 shows corresponding cost and price data for the other areas supplying sugar in important quantities in the American market, namely continental beet, Louisiana, Hawaii, and Puerto Rico. Costs for the Philippines are not included because no comparable cost data are available for 1921-23.

The cost data in the present investigation, namely, the three years 1929-32, have been set up in this table in two ways: First, upon the basis of the cost of company-grown cane or beets and the price paid for the purchased raw material, and second, upon the basis of the cost of production of cane or beets as found in this investigation. For the purpose of comparing foreign and domestic cost of production, the cost rather than price basis of cane or beets has been used in this report, but in the present tables the figures for the recent period directly comparable with those obtained 10 years ago are upon the basis of cost of company-grown and purchased raw materials. No net receipts, prices, or margins are compared with the total cost upon the cost basis of the raw material.

Attention is called to the fact that the margins between the costs given and the net receipts are not equivalent to unit profits or losses because, on the one hand, there are certain small items of expense, such as selling expenses, not included in the cost of production and, on the other hand, the cost figure covers imputed interest on the entire net investment in the industry, including the owner's equity. In the case of beet sugar, however, the out-freight paid and the cash discounts have been deducted in obtaining the net receipts.

It will be observed that the interest item is larger when costs of sugar are shown on the basis of the farm cost of production of all cane

or beets than it is on the basis of the cost of production of company-grown cane plus the price paid for purchases of beets and cane. Upon the first of these bases all land and mill investments are included in the interest calculation whereas in the second basis the land charge for company-grown cane is included with the mill investment but there is no interest charge on the investment in producing the purchased cane or beets except in so far as it may be covered in the price of a product.

It is interesting to observe that costs and prices move upward and downward somewhat together but that the fluctuation in price is greater than the fluctuation in costs. This raises the interesting question as to the extent to which costs are following prices in the process of continual adjustment upward or downward as the prices fluctuate and, on the other hand, to what extent the changing costs cause fluctuations in the price.

Although costs and prices have declined sharply both in the United States, its insular areas, and in Cuba, the greatest percentage decline has been in Cuba. This condition is partly due to the cushioning effect of the duty on sugar within the protected areas of the United States and the islands. The absolute declines in the cost of production of sugar in all of the areas supplying the United States markets have moved more or less together except for Louisiana. The decline in Cuban costs in the 10-year period (based upon the cost of producing company cane and the price of purchased cane) was approximately 1.60 cents per pound. The cost of refined beet sugar declined during the same period about 1.54 cents per pound. The decline in costs for Hawaii was 2.02 cents and for Puerto Rico about 2.15 cents per pound. Louisiana, on the other hand, showed a decline in costs of only about 0.75 cent per pound. The decline in the net receipts per pound of sugar during the 10-year period was 2.31 cents for Cuba, 1.89 cents for refined beet sugar, 2.24 cents for Hawaii, 1.72 cents for Puerto Rico, and 1.14 cents for Louisiana.

Table 41.- Comparison of costs of production (f.o.b. mill) net receipts, and prices of sugar for specified years - Cuba

(Cents per pound - raw sugar)

Period	Cost or price of raw materials delivered at plant	Mill operations	Credit deductions	Interest on investment	Total cost	Net receipts from sugar	Margin of receipts over costs 1/	Price quotations 96° sugar public warehouses Cuba
Cost on basis of company grown and price of purchased cane -								
1912	)							2.58
1913	)		Cost data not available					1.92
Simple average	)							2.25
1921-22	1.156	0.861	0.013	0.493	2.497	2.426	- 0.071	2.393
1922-23	2.383	.952	.023	.568	3.880	4.560	.680	4.517
Simple average	1.770	.906	.018	.530	3.188	3.493	.305	3.455
1929-30	.987	.558	.148	.250	1.647	1.419	- .228	1.427
1930-31	.862	.595	.050	.314	1.721	1.297	- .424	1.126
1931-32	.651	.521	.063	.325	1.434	.812	- .622	.818
Simple average	.833	.558	.087	.296	1.600	1.176	- .424	1.124
Cost on basis of farm cost of cane -								
1929-30	1.092	.558	.148	.295	1.797			
1930-31	.826	.595	.050	.362	1.733			
1931-32	.670	.521	.063	.371	1.499			
Simple average	.862	.558	.087	.343	1.676			

1/ The margin between mill cost and receipts for sugar is not equivalent to unit profit or loss because on the one hand interest on the total investment, including owner's equity, is included in the cost, and on the other hand, some small miscellaneous charges, such as mill marketing expenses, are not included in the cost of production.

Table 42. - Comparison of costs of production, net receipts, and prices of sugar for specified years - Domestic beet

(Cents per pound - refined sugar)

Period	Cost or price of raw materials delivered at plant	Mill operations	Credit deductions	Interest on investment	Total cost	Net receipts from sugar	Margin of receipts over costs 1/	Prices of refined beet sugar 2/
Cost on basis of company grown and price of purchased beets -								
1912								-
1913								4.06
Simple average								
1921-22	2.915	2.021	0.111	0.681	5.506	6.301	0.795	5.491
1922-23	3.372	2.358	.304	.919	6.345	6.569	.224	7.911
Simple average	3.144	2.190	.208	.800	5.926	6.435	.509	6.701
1929-30	3.184	1.476	.367	.439	4.732	4.933	.201	4.565
1930-31	3.260	1.281	.245	.368	4.664	4.542	-.122	4.265
1931-32	2.440	1.122	.137	.342	3.767	4.161	.394	3.857
Simple average	2.962	1.293	.250	.383	4.388	4.545	.157	4.229
Cost on basis of farm cost of beets -								
1929-30	2.370	1.476	.367	.633	4.112			
1930-31	2.389	1.281	.245	.577	4.002			
1931-32	2.094	1.122	.137	.592	3.671			
Simple average	2.284	1.293	.250	.601	3.928			

1/ The margin between mill cost and receipts for sugar is not equivalent to unit profit or loss because, on the one hand, interest on the total investment, including owner's equity, is included in the cost, and on the other hand, some small miscellaneous charges, such as mill marketing expenses, are not included in the cost of production.

2/ Obtained by deducting 0.20 cent per pound from the price of granulated sugar f.o.b. New York.

Table 42 cont. --Comparison of costs of production, net receipts, and prices of sugar for specified years - Louisiana-

Period	Cost or price of raw materials delivered at plant	Mill operations	Credit deductions	Interest on investment	Total cost	Net receipts from sugar	Margin of receipts over costs 1/	Price quotations 96° sugar, duty paid, New York
Cost on basis of company grown and price of purchased cane -								
1912	Cost data not available							4.162
1913								3.506
Simple average								3.834
1921-22	2.444	1.562	0.167	0.456	4.295	3.653	-0.642	4.230
1922-23	3.512	1.602	.302	.480	5.292	5.272	-.020	6.580
Simple average	2.978	1.582	.235	.468	4.793	4.462	-.331	5.405
1929-30	3.199	1.291	.545	.364	4.309	3.456	-.854	3.518
1930-31	2.735	1.119	.333	.339	3.860	3.218	-.642	3.328
1931-32	2.783	1.029	.202	.351	3.961	3.276	-.685	3.011
Simple average	2.906	1.146	.360	.351	4.043	3.317	-.726	3.286
Cost on basis of farm cost of cane -								
1929-30	3.429	1.291	.545	.845	5.020			
1930-31	2.787	1.119	.333	.674	4.247			
1931-32	2.749	1.029	.202	.697	4.273			
Simple average	2.989	1.146	.360	.738	4.513			

1/ The margin between mill cost and receipts for sugar is not equivalent to unit profit or loss because on the one hand interest on the total investment, including owner's equity, is included in the cost, and on the other hand, some small miscellaneous charges, such as mill marketing expenses, are not included in the cost of production.

Table 42contd. - Comparison of costs of production, net receipts, and prices of sugar for specified years - Hawaii

(Cents per pound - raw sugar)

Period	Cost or price of raw materials delivered at plant	Mill operations	Credit deductions	Interest on investment	Total cost	Net receipts from sugar	Margin of receipts over costs 1/	Price quotations 96° sugar, duty paid, New York
Cost on basis of company grown and price of purchased cane -								
1912								4.162
1913								3.506
Simple average								3.834
1921-22	2.681	1.296	0.005	0.685	4.657	4.526	- 0.131	4.230
1922-23	3.119	1.562	.014	.601	5.268	6.424	1.156	6.580
Simple average	2.900	1.429	.010	.643	4.962	5.475	.513	5.405
1929-30	2.297	.490	.066	.416	3.137	3.397	.259	3.518
1930-31	2.137	.438	.031	.390	2.934	3.384	.450	3.328
1931-32	2.009	.386	.008	.363	2.750	2.933	.183	3.011
Simple average	2.148	.438	.035	.389	2.940	3.238	.298	3.286
Cost on basis of farm cost of cane -								
1929-30	2.287	.490	.066	.463	3.174			
1930-31	2.127	.438	.031	.433	2.967			
1931-32	2.002	.386	.008	.401	2.781			
Simple average	2.139	.438	.035	.432	2.974			

1/ The margin between mill cost and receipts for sugar is not equivalent to unit profit or loss because on the one hand interest on the total investment, including owner's equity, is included in the cost, and on the other hand, some small miscellaneous charges, such as mill marketing expenses, are not included in the cost of production.

Table 42-Contd. - Comparison of costs of production, net receipts, and price of sugar for specified years - Puerto Rico

(Cents per pound - raw sugar)

Period	Cost or price of raw materials delivered at plant	Mill	Credit deductions	Interest on investment	Total cost	Net receipts from sugar	Margin of receipts over costs 1/	Price quotations 96° sugar, duty paid, New York
Cost on basis of company grown and price of purchased cane -								
1912	Cost data not available							4.162
1913								3.506
Simple average								3.834
1921-22	2.784	1.089	0.029	0.542	4.386	2.984	-1.400	4.230
1922-23	3.889	1.342	.031	.644	5.844	6.779	.935	6.580
Simple average	3.337	1.215	.030	.593	5.115	4.882	- .233	5.405
1929-30	2.141	.659	.163	.377	3.014	3.447	.433	3.518
1930-31	2.174	.697	.068	.448	3.251	3.261	.010	3.328
1931-32	1.775	.556	.046	.358	2.643	2.765	.122	3.011
Simple average	2.030	.637	.093	.395	2.969	3.157	.188	3.286
Costs on basis of farm cost of cane -								
1929-30	2.047	.659	.163	.448	2.991			
1930-31	2.165	.697	.068	.529	3.323			
1931-32	1.778	.556	.046	.417	2.705			
Simple average	1.998	.637	.093	.464	3.006			

1/ The margin between mill cost and receipts for sugar is not equivalent to unit profit or loss because on the one hand interest on the total investment, including owner's equity, is included in the cost, and on the other hand, some small miscellaneous charges, such as mill marketing expenses, are not included in the cost of production.

PART II - REFINED SUGAR

Introduction

History and scope of the investigation

The history and scope of the investigation of both raw and refined sugar have been outlined in the introduction to the raw sugar section of this report.

Chief competing country

The tabulation which follows, shows the total quantity of sugar refined in foreign countries which was marketed in the United States in each year from 1927 to 1932, inclusive.

(In short tons - converted from 100-pound bags)

Year	From Cuba	From other foreign countries	Total	Approximate percent Cuban
1927	122,328	13,164	135,492	90.3
1928	196,669	14,295	210,964	93.2
1929	274,436	11,769	286,205	95.9
1930	263,431	9,497	272,928	96.5
1931	340,089	4,939	345,028	98.6
1932	446,044	9,367	455,411	98.0

The preceding table shows that Cuba, which supplied about 90 percent in 1927 and 98 percent in 1932 of foreign refined sugar marketed in the United States, is the principal competing country in refined sugar.

Representative period

The three latest years for which data were available at the time the investigation was begun, namely, the calendar years 1929, 1930, and 1931, were taken for the cost period.

Representative character of the cost data

Cost data were secured from all the operating domestic refineries and from all the Cuban refineries which had been operating long enough to afford representative data. The cost figures may therefore be regarded as representative of domestic and Cuban costs for the period covered.

Comparability of domestic and Cuban refined sugar

The greater part of refined sugar produced and consumed in continental United States and Cuba consists of the kind known as "hard granulated." Practically all imports of refined sugar are of the hard granulated type put up usually in 100-pound bags, or twenty 5-pound bags. The hard granulated sugar produced in the United States is like or similar to that produced in Cuba and may be considered comparable for purposes of cost comparison under section 336 of the Tariff Act of 1930. Cuban refined sugar has sometimes been sold at a discount from the price of

domestic refined sugar, but there is not sufficient difference between the domestic and Cuban products so that any adjustment in costs is necessary on that account.

Specialties, such as soft sugar (commonly known as brown sugar), powdered sugar, and other types which may also be classed as specialties, are not imported and therefore the cost comparison between the United States refined and Cuban refined sugars has been made on the basis of hard granulated sugar put up in 100-pound bags.

Description

Refined sugar is of two kinds, namely, (1) hard sugar and (2) soft sugar. Sugar is sometimes marketed in the liquid state, when it is either hard sugar or soft sugar dissolved in water. In the case of hard sugar all (or practically all) of the molasses and other non-sucrose substances have been removed from the raw sugar. In the case of the different kinds of soft sugar, a certain proportion of molasses or of other non-sucrose substances is retained after the refining process. Soft refined sugar is like raw sugar in that it contains certain substances that are not sucrose. The principal difference is that the raw sugar contains non-sucrose substances in about the same proportions in which nature put them there; the soft refined sugar contains such substances in definite proportions determined by the refiner.

Hard sugar, as well as soft sugar, is produced in a variety of forms to meet the requirements of consumers. Its grade depends primarily on the proportion of sucrose which it contains as determined by the action of a ray of light when passed through a prism and through a solution in which the sugar has been dissolved. The extent to which the ray of light is thereby displaced from normal, as measured in degrees, by an instrument known as a polariscope or a saccharimeter, determines the sucrose content and, therefore, the grade of the sugar. The grading of soft sugar depends partly on the color and partly on the polariscope test for the content of sucrose.

Raw sugar was formerly bought and sold, and duty assessed on the basis of its color as compared to a set of prepared samples known to the trade as Dutch Standards. In this set of standards the colors were numbered, the number increasing as the color grew lighter. The use of Dutch Standards has been superseded by the polariscope test.

Each grade of hard sugar may be "built up" into crystals of a definite size as determined by the refiner. Before being marketed these crystals may be powdered or pulverized or they may be molded into lumps, slabs, tablets, or cubes. The ordinary hard, white granulated sugar, composed of loose crystals of definite size, is the form in which the greater part of refined sugar is marketed in the United States. The domestic beet sugar factories and the "offshore" refineries (i.e. those outside the limits of continental United States) produce practically no other grade than hard, white granulated. Most of the soft sugar and of the special hard sugars which are packed in cartons are produced by the domestic cane sugar refining companies in varied assortment.

Production and Consumption

The outstanding fact in regard to the production of refined sugar in the United States during recent years has been the increase in the capacity of the refineries beyond the demand of the country for refined sugar. This has resulted in an excess capacity of refineries variously estimated at from 33-1/3 to 50 percent. The number of cane sugar refineries, however, was one less in 1931 than in 1921, namely 19 in the later as against 20 in the earlier year. According to the Census statistics, the number of

wage earners decreased from 15,457 in 1921 to 11,734 in 1931, and because of the lower price of sugar the value of the product decreased from $466,000,000 to $395,000,000. However, the value added by manufacture, which represents all costs (except that of raw materials and power) plus profit, increased from $40,000,000 to $59,000,000.

Practically all the cane sugar refining industry of continental United States is in plants located on the seaboard, the majority of them being on the Atlantic coast. Approximately 6,000,000 tons per year of refined sugar, including beet sugar, have been consumed in the United States in recent years and about one half of this has been cane sugar refined on the Atlantic and Gulf coasts. With the exception of less than 200,000 tons a year produced in Louisiana, the raw sugar used by these refineries came from Cuba and the insular areas of the United States. The remainder of the sugar consumption of the United States is supplied by beet sugar refineries, by cane sugar refineries on the Pacific coast, and by imports of refined sugar.

Table 43 gives an analysis of the domestic consumption of sugar, showing the various areas where the sugar was refined:

Table 43. - Refined sugar: Analysis of consumption of sugar in continental United States to show area where refined

(Quantity - in short tons)

	1928	1929	1930	1931	1932
Where the sugar was refined					
U.S. mainland (total)	5,863,970	5,994,119	5,834,275	5,598,833	5,140,551
Cane (total)	4,703,260	5,034,682	4,768,225	4,343,517	3,908,395
U.S. refiners	4,660,738	5,005,398	4,703,198	4,291,545	3,859,271
Direct consumption 1/	40,328	28,431	65,027	51,972	49,124
Miscellaneous 2/	1,194	853	3/	3/	3/
Beet	1,161,710	959,437	1,066,050	1,255,316	1,232,156
U.S. insular areas (total) 4/	68,705	66,263	116,791	133,927	193,052
Hawaii	15,943	9,905	17,073	10,069	24,321
Puerto Rico	44,807	43,042	72,614	77,106	111,194
Philippine Islands	7,955	13,316	27,104	46,752	57,537
Cuba (preferential duty) 5/	241,178	432,721	300,112	393,640	492,635
Countries paying full duty	33,899	15,195	20,124	5,828	13,398
Total deliveries	6,207,752	6,508,298	6,271,302	6,132,228	5,839,636

Source: Basic data from Willett and Gray.

1/ Principally sugar grown and milled in Louisiana. These figures differ considerably in some years from those reported by other sources.

2/ Various sugars, including domestic maple sugar.

3/ Not separately reported.

4/ Includes some direct consumption sugar.

5/ Includes considerable quantities of direct consumption sugar.

The table shows where the sugar was refined, while the following table makes a further analysis of the figures of consumption of refined sugar in the United States to show the relative importance of raw sugar production and of refining in the United States and in those areas from which the United States draws its supply of raw sugar. Table 44 shows that the production of raw cane sugar in continental United States is relatively unimportant, while the refining industry is relatively unimportant in the insular areas of the United States and in Cuba. The refining industry in Cuba has, however, been increasing rapidly in the last 8 years, although it is still of far less importance than the production of raw sugar in that country. The table also shows that the production of beet sugar is approximately five times as large as the production of refined sugar from raw cane sugar produced in continental United States.

If beet sugar is included, approximately ten times as much sugar is refined in continental United States as enters the consumption of this country through importations from Cuba and the insular areas. Out of 5,840,000 tons of refined sugar consumed in 1932, although only 1,382,000 tons was from beets or cane grown in continental United States, 5,141,000 tons were brought to finished form in continental United States. This latter quantity represented 88 percent of the total consumption of refined sugar, whereas 3.3 percent of the consumption consisted of sugar refined in the insular areas of the United States and 8.7 percent of sugar refined in foreign countries (principally in Cuba).

Table 44.- Consumption of refined sugar in continental United States according to areas in which the crops were grown and in which the sugar was refined

	Quantity, in thousands of short tons				Percent of total			
	1929	1930	1931	1932	1929	1930	1931	1932
Grand total	6,508	6,271	6,132	5,840	100.0	100.0	100.0	100.0
Produced and refined in continental United States:								
Beet	960	1,066	1,255	1,232	14.7	17.0	20.5	21.1
Cane	177	184	193	150	2.7	2.9	3.1	2.6
Produced in insular Possessions:								
Refined in Possessions 1/	66	117	134	193	1.0	1.9	2.2	3.3
Refined in continental United States	1,913	2,123	2,233	2,593	29.4	33.9	36.4	44.4
Produced in Cuba:								
Refined in Cuba 2/	433	300	393	493	6.7	4.8	6.4	8.4
Refined in continental United States	2,943	2,453	1,887	1,154	45.3	39.1	30.8	19.8
Produced in other foreign countries:								
Refined in foreign countries	15	20	6	13	.2	.3	.1	.2
Refined in continental United States	1	8	31	11	-	.1	.5	.2
Total -								
Refined in continental United States	5,994	5,834	5,599	5,141	92.1	93.0	91.3	88.0
Refined in Possessions	66	117	134	193	1.0	1.9	2.2	3.3
Refined in Cuba and other foreign countries	448	320	399	506	6.9	5.1	6.5	8.7

1/ Includes some direct consumption sugar.
2/ Includes considerable quantities of direct consumption sugar.

Consumption of refined sugar, by regions

The following table gives an analysis of the domestic consumption of sugar showing the areas where the sugar was consumed:

Table 45. - Refined Sugar: Analysis of consumption of sugar in continental United States, to show region where consumed

(Quantity - in short tons)

	1928	1929	1930	1931	1932
Total deliveries for domestic consumption	6,207,752	6,508,298	6,271,302	6,132,228	5,839,636
Where the sugar was consumed					
Atlantic Coast States	2,672,124	2,726,260	2,764,897	2,717,792	2,595,800
Gulf Coast States	489,882	518,440	504,682	464,027	392,055
Mississippi Valley States -					
East of Mississippi River	1,576,754	1,578,443	1,580,516	1,562,267	1,398,918
West of Mississippi River	825,560	814,611	825,370	767,848	761,962
Pacific Coast and Mountain States	661,684	660,937	663,685	642,817	649,257
U. S. Government	719	231	1,344	302	332
Undistributed difference 1/	-18,971	209,376	-69,162	-22,825	41,312

Source: Based on data prepared by The Sugar Institute, Inc., and by Willett and Gray.

1/ Represents difference in figures for totals compiled by Willett and Gray as compared with those of The Sugar Institute, Inc.

Consumption by regions

The greatest consuming region for sugar is the Atlantic coast States, while the Mississippi Valley States, east of the Mississippi River, rank next. Out of every 100 pounds of refined sugar marketed in the United States, the Atlantic coast States normally take about 43⅓ pounds; the interior States in the Mississippi Valley about 38 pounds; the Pacific coast and Mountain States about 10½ pounds; and the Gulf coast States, 8 pounds or less. The share of the Atlantic coast States and also the shares of the Pacific coast and Mountain States increased somewhat in 1932 as compared with 1928 (see table 45).

The figures in the table do not represent the quantities directly consumed by the people of these groups of States, because substantial quantities were used by manufacturers of food products - confectioners, bakers, makers of beverages, fruit canners, etc. -, part of whose products were sold and consumed in other areas or were exported. The table does, however, reflect the relative importance of the several regions as markets for refined sugar.

The table also indicates the relatively stable domestic demand for refined sugar during these years. Notwithstanding a great change in economic conditions, the net decrease in total deliveries of sugar for the country as a whole was less than 7 percent.

Imports of Refined Sugar

There is no precise distinction in the foreign trade statistics of the United States between raw and refined sugar. The imports are, however, shown by sugar degrees; practically all imports testing 99, and all testing 100 degrees have been subjected to refining.

The following table shows the dutiable imports of cane sugar from Cuba and from other foreign countries and imports of beet sugar, by sugar degrees. The figures show that there has been an increase in the imports of sugar of higher polariscopic test from Cuba. Before 1927 the quantity of sugar imported of a test of more than 96 degrees was negligible. There has been a considerable increase in the imports of 97-degree and of 100-degree (refined) sugar, even though the imports of sugar testing 96 degrees and less have been decreasing. Imports of full-duty cane sugar and of beet sugar have been negligible. Details are given for each year in the case of imports from Cuba, but only 10-year averages for the unimportant imports from other countries. On the average for the 10-year period 95-degree sugar represented 35.6 percent of the total imports of dutiable sugar from all countries, 96-degree sugar represented 53.3 percent, 97-degree sugar 4.6 percent, and 100-degree sugar 5.0 percent, all other grades making up only 1.5 percent. The bulk of the imports consists either of raw sugar close to 96-degree test or of refined sugar.

Table 46. - Sugar: Imports of sugar by sugar degrees (dutiable)

(Quantity in short tons)

Year	Polariscope test						
	Below 95 degrees	95 degrees	96 degrees	97 degrees	98 degrees	99 degrees	100 degrees
Cane sugar from Cuba:							
1923	8,214	1,257,338	2,085,611	27,287	7,018	1,763	14,288
1924	804	1,478,996	2,144,896	77,112	16,390		608
1925	7,287	1,395,297	2,412,298	61,619	20,699	3,207	1,324
1926	1,762	1,597,490	2,374,897	65,115	15,812	7,518	58,082
1927	1,376	1,524,199	1,909,690	113,577	29,551	23,728	88,706
1928	37,496	1,213,252	1,673,200	165,864	11,802	10,751	186,726
1929	3,858	1,309,263	1,871,005	195,614	6,659	7,979	255,966
1930	14,782	920,360	1,377,551	424,901	30,776	16,913	255,070
1931	850	769,923	1,031,383	223,556	8,259	22,358	352,082
1932	10,881	403,541	734,614	186,264	32,236	18,535	420,698
Average - 10 years	8,731	1,186,965	1,761,564	154,091	17,921	11,276	163,355
Cane sugar from other foreign countries -							
Average - 1923-1932	1,232	5,467	25,990	1,375	1,351	8,947	4,417
Beet sugar -							
Average - 1923-1932	166	-	-	-	-	10	390
Total cane and beet sugar							
Average 1923-1932	10,129	1,192,432	1,787,554	155,466	19,272	20,233	168,162

Compiled from Foreign Commerce and Navigation of the United States.

Table 47 shows the imports of dutiable sugar from all countries distinguished as below 99-degree and of 99 and 100 degree test, for each year since 1923. The statistics do not include receipts of sugar from United States insular possessions.

Table 47.- Sugar: Imports testing below 99 degrees compared with imports testing 99 degrees and above (dutiable sugar only)

Year	Quantity - in thousands of short tons			Percentage 99 degrees and above
	Below 99 degrees	99 degrees and above	Total	
1923	3,547	42	3,589	1.2
1924	3,809	19	3,828	.5
1925	3,909	21	3,930	.5
1926	4,059	81	4,140	2.0
1927	3,580	121	3,701	3.3
1928	3,102	219	3,321	6.6
1929	3,394	273	3,667	7.4
1930	2,800	289	3,089	9.4
1931	2,062	378	2,440	15.5
1932	1,385	442	1,827	24.2
10-year average	3,165	188	3,353	5.7

Source: Compiled from Foreign Commerce and Navigation of the United States.

Rates of Duty on Imports of Sugar

Under the Tariff Act of 1909, and under all subsequent tariff acts, the basic rate of duty was fixed on sugar testing not above 75 degrees, polariscope test, with a specified increase in the rate of duty for each degree above 75 degrees. The following table is given to show the duties on 96-degree (raw) sugar and on 100-degree (refined) sugar, and the differential between them, under each of the tariff acts from 1909 to 1930. In each of the tariff acts since the act of 1909, the differential per degree has been a constant figure throughout the scale of degrees, i.e., there has been no additional differential between 96-degree and 100-degree sugar. Under the act of 1909, however, the rate was the same on 99-degree and on 100-degree sugar; the increment per degree was o.028 cent per pound on Cuban sugar, from 75 degrees to 98 degrees, but the rate on 99 and 100-degree sugar was 0.116 cent per pound higher than that on 98-degree sugar.

The amount of differential per degree on sugar was reduced in the act of 1930 below the differential in the act of 1922, even though the basic rate was increased. This was the result of increasing the rate on 75-degree sugar relative to the rate on 96-degree and 100-degree sugar, thus affording increased protection against low test sugars but making it necessary to have a lower increment per degree above 75 degrees.

Table 48.- Duties in tariff acts from 1909 to 1930 on sugar of 96 degrees and 100 degrees, increments of duty per degree, and differential

(Cents per pound)

Tariff act	Duty on 96-degree sugar		Increment per degree		Duty on 100-degree sugar		Differential between 96-degree and 100-degree sugar	
	Cuban	Full duty	Cuban	Full duty	Cuban	Full duty	Cuban	Full duty
1909 1/	1.348	1.685	0.028	0.035	1.520	1.900	0.172	0.215
1913	1.0048	1.256	.0208	.026	1.088	1.360	.0832	.104
1921	1.600	2.00	.032	.04	1.728	2.16	.128	.16
1922	1.7648	2.206	.0368	.046	1.9120	2.390	.1472	.184
1930	2.00	2.50	.03	.0375	2.12	2.65	.12	.15

1/ Sugar testing 99 or 100 degrees carried a flat rate in this act.

Duties collected and drawback paid on sugar

The following table shows the computed duty on United States imports of sugar, the drawback paid, and net revenue from 1923 to 1931, inclusive. The table shows that during this period the net revenue reached the highest point in 1926 and that since then it has fallen off considerably. It also shows that, although the duty was increased in 1930, the duty collected and net revenue have decreased sharply.

Table 49. - Sugar: Computed duty on United States imports of sugar, drawback paid, and net revenue, 1923 to 1931, inclusive

Year	Duty computed	Drawback paid 1/	Net revenue
	In millions of dollars - round figures		
1923	127.5	9.4	118.1
1924	135.1	9.0	126.1
1925	138.0	14.4	123.6
1926	145.4	5.7	139.7
1927	130.0	5.7	124.3
1928	117.2	4.6	112.5
1929	129.5	5.8	123.7
1930	115.2	3.3	112.2
1931	98.5	4.4	94.1
Total	1,136.4	62.4	1,074.3
9-year average	126.3	6.9	119.4

1/ For details of drawback paid, see table 24 in Appendix.

Exports

Statistics of exportspublished by the Department of Commerce include shipments to foreign countries not only from continental United States but also from Puerto Rico and Hawaii. However, neither of these outlying possessions ships any sugar to countries other than the United States. Continental United States, itself, exports no raw sugar, but the exports of refined sugar have at times been considerable. Table 50 shows these exports in quantity and value.

The largest exports of refined sugar, in quantity, were in 1922, amounting to 918,000 short tons, a figure equal to 16 percent of the total domestic consumption in the United States in that year and to about 20 percent of the total imports of raw and refined sugar from duty-paying countries. In 1932 the exports were 49,000 tons. In that year the principal countries of destination in order of the quantities taken were United Kingdom (about 44 percent of the total), the Netherlands, Norway, Panama, Uruguay, and Union of South Africa, but appreciable quantities were sent to numerous other widely scattered countries.

It should be noted that practically all of this sugar was exported with benefit of drawback.

Table 50. - Refined sugar: Domestic exports

	Short tons	Value
Fiscal year ending June 30		
1910	62,726	$5,396,009
1911	27,474	2,244,379
1912	39,797	3,681,072
1913	21,997	1,681,302
1914	25,448	1,839,983
1915	274,504	25,615,016
1916	815,075	79,390,147
1917	624,454	77,093,685
Calendar year		
1918	203,648	27,038,667
1919	737,704	114,737,491
1920	462,096	94,877,045
1921	466,896	48,826,890
1922	918,361	69,679,829
1923	222,458	28,933,391
1924	220,248	24,027,807
1925	379,358	28,159,672
1926	106,893	7,569,824
1927	125,323	10,311,368
1928	122,587	8,548,341
1929	102,639	6,103,951
1930	77,814	3,807,050
1931	52,577	2,238,307
1932	49,004	1,551,386

Source: Foreign Commerce and Navigation of the United States.

Prices of Refined Sugar

Table 51 shows the annual (or semiannual) prices of raw sugar, duty paid, in comparison with the prices of refined sugar at New York, together with the margin between the two. During most years this margin has ranged between about 1 cent and 1.3 cents per pound; the margins were considerably higher from 1917 to the middle of 1921 as the result of war conditions.

Neither the price of granulated sugar nor the price of raw sugar, duty paid, reflects the movement of basic sugar prices during the last few years because the duty is a large factor in the total price, which remains unchanged under any given tariff act and which was increased by the act of 1930. The market movements of basic sugar prices themselves are indicated by the prices of raw sugar ex-duty, as shown in table 12, part I, of this report.

Table 51.- Prices of 96 degree centrifugal raw sugar, duty paid, at New York and of fine granulated sugar, f.o.b. at New York

(Cents per pound)

	Raw sugar, duty paid	Refined sugar	Margin
1914	3.87	4.66	0.89
1915	4.63	5.52	.89
1916	5.76	6.87	1.11
1917	6.34	7.76	1.42
1918	6.00	7.78	1.78
1919 (Jan.-Nov.	6.88	8.82	1.94
1920 (Dec.1919-Dec. 1920)	12.90	Nominal	
1921 (Jan.-May)	5.36	7.20	1.84
(June-Dec.)	4.42	5.40	.98
1922 (Jan.-Sept.)	4.33	5.64	1.31
(Oct.-Dec.)	5.55	6.77	1.22
1923	6.98	8.31	1.33
1924	5.93	7.40	1.47
1925	4.32	5.47	1.15
1926	4.35	5.48	1.13
1927	4.80	5.81	1.01
1928	4.21	5.52	1.31
1929	3.75	5.00	1.25
1930 (Jan.-June)	3.48	4.75	1.27
(July-Dec.)	3.25	4.48	1.23
1931 (Jan.-June)	3.28	4.39	1.11
(July-Dec.)	3.42	4.45	1.03
1932 (Jan.-June)	2.80	3.90	1.10
(July-Dec.)	3.06	4.12	1.06
1933 (Jan.-June)	3.05	4.13	1.08

Source: Basic data from Willett and Gray.

Sugar Refining Industry in the United States

Location and capacity of plants

The following table shows the number of cane sugar refining plants in the different United States mainland areas with an estimate of the annual capacity both in terms of raw sugar and of refined sugar.

Table 52 .- Refined sugar: Number of cane sugar refineries in the United States with estimate of approximate annual capacity, 1931

(Capacity in thousands of short tons)

Location of plants at or near cities specified	Operating		Closed		Total		
	Number of plants	Capacity for melting raw sugar	Number of plants	Capacity for melting raw sugar	Number of plants	Capacity for melting raw sugar	Capacity for producing refined sugar
Atlantic Coast States							
Boston	2	635	-	-	2	635	594
New York City	4	2,143	2	954	6	3,097	2,894
Philadelphia	3	1,500	-	-	3	1,500	1,400
Baltimore	1	449	-	-	1	449	420
Savannah	1	374	-	-	1	374	350
Total	11	5,101	2	954	13	6,055	5,658
Gulf Coast States							
New Orleans area	4	1,213	-	-	4	1,213	1,134
Galveston-Houston area	2	464	-	-	2	464	434
Total	6	1,677	-	-	6	1,677	1,568
Interior States in Mississippi Valley	None		None		None		
Pacific Coast and Mountain States							
San Francisco	2	1,169	-	-	2	1,169	1,092
Total - United States	19	7,947	2	954	21	8,901	8,318

Assembling raw stocks for refining

With the exception of the comparatively small quantity of sugar refined from raw sugar made from cane grown in this country, practically all of the sugar refined in domestic cane refineries comes by ocean steamship in cargo lots from "offshore" sources - Cuba, Puerto Rico, Hawaii, and the Philippines. The refiner purchases raw sugar on the basis of its sucrose content determined by polariscopic test. The price for sugar testing 96 degrees is the base price. If the sugar tests higher than 96 degrees, a certain allowance is added to the basic price for 96-degree sugar specified in the contract. If the test is below 96 degrees, a certain allowance is deducted. The actual polarization test is made from a sample of the sugar after it has arrived at the refinery.

Refining methods

Raw cane sugar as received in jute bags at domestic seaboard refineries is a crude, crystalline substance, grayish-brown in color. It contains 96 to 97 percent sucrose (pure sugar), about 1 percent or less of water, about 1 percent "invert" sugar (glucose) and about one half of 1 percent ash. It also contains organic acid radicals of certain salts, coloring matters, proteins and gums. The object of refining is (1) to separate the sugar (sucrose) content from these other constituents, and (2) to prepare the sugar, so separated, for market.

The non-sucrose constituents are contained, for the most part, in the film of molasses which covers each tiny crystal of sucrose; the remainder are shut up within the crystal, where they have become enclosed as the crystal formed in cooling in the raw sugar mill.

The following is a brief characterization of the processes in bone char refining:

(1) "Affination" - which simply means that the raw sugar is washed for the purpose of removing the film of molasses and other impurities from the sucrose crystals.

(2) Melting.- After the crystals are washed until they are about 99 percent pure sucrose, the next step is to melt them. None of the non-sucrose content enclosed in the crystalline structure could otherwise be removed therefrom. They are melted or dissolved in hot "sweetwater", a dilute solution that is made from some of the operations in the plant.

(3) "Defecation" - The object of this process is to precipitate or to coagulate the impurities contained in the liquor. The washed sugar and the raw washings are pumped to separate tanks where they are "blown up"; that is to say, from a coil in the bottom of each tank compressed air is blown through them. Some milk of lime is added to neutralize the slightly acid nature of the solution and some infusorial earth as an aid to filtration.

(4) Clarification - From the blow-up tanks the liquor is run through the leaf pressure filters. The use of diatomaceous earth (or "Kieselguhr") in the solution prevents the cloth from becoming impervious, or rather retards it in becoming so.

(5) Filtration in bone-char filters - The liquor is run through upright chambers or cisterns made of cast iron of cylindrical shape, usually about ten feet in diameter and 20 feet in height. The chamber is

filled almost completely with boneblack which rests on a perforated plate at the bottom. The object of this operation is principally to remove coloring matter in the liquor. It also removes mineral salts and other impurities, organic and inorganic. At the char filter outlet pipes, the filter liquors are classified according to the purity of their sucrose content, which in connection with their color determines the grade of sugar into which they are to be made.

(6) Crystallization - This is accomplished by boiling and evaporation in a retort known as a vacuum pan. The creation of a vacuum in the retort reduces the boiling point of solutions to be crystallized. Prior to going to the vacuum pan, however, much of the excess water is removed in multiple-effect evaporators. This economizes time and fuel in the operation of the vacuum pans. In these vacuum pans liquors are boiled to definite specifications as to the size and hardness of crystals. Granulated and other hard sugars require relatively high temperatures from 160 to 180 degrees Fahrenheit; soft sugars are boiled at temperatures of 120 to 130 degrees.

(7) The centrifugal process - In the centrifugal machines, which are drums that are revolved at a high rate of speed, the mother liquor, in which the crystals leave the vacuum pan, is separated from the crystals of sugar. During the centrifugal process, the crystals are washed with pure filter water.

(8) Drying - The granulated sugar is next dried in large revolving hot air drums or cylinders.

(9) Grading - The sugar is then sifted over vibrated screens which grade the sugar according to the size of the crystals.

(10) Molding - Such of the sugar which is to be made into cubes, tablets, or other forms, is put through a molding process.

(11) Pulverizing - Such of the sugar which is to be sold in powdered form is ground and passed through bolting cloth.

(12) Packing - Sugar is packed at the refinery according to the needs of the trade for which it is intended. Bags or barrels are filled with hard, white, granulated sugar. The smaller bags and other packages are ordinarily weighed, sealed, and packed in cases by automatic machinery. Machines are used for wrapping cubes and tablets of refined sugar before they are packed. Cartons containing cubes and tablets are filled by hand, and considerable hand work is needed in some cases, in packing, weighing, and sealing barrels and bags. Owing to the moist, sticky nature of soft sugars, no filling machinery has yet been found to work satisfactorily.

White granulated sugar constitutes the bulk of the output of the cane sugar refineries and the greater part of it is put up in 100-pound bags. For this reason, the cost comparison has been made on the basis of sugar of that kind packed in standard-sized containers. Best quality of granulated sugar results from the first run of washed sugar. Additional white granulated sugar is obtainable from reprocessing the sirups taken off in the first and second runs. Considerable hard granulated sugar is also obtained from the first run of raw washings. The residual sirups from intermediate reprocess operations, go back into the operation of the refinery. The final sirup, known as "barrel sirup", is boiled, filtered, and marketed.

Soft refined sugars are products of the bone-char process. They are filtered from liquors which contain defecated and clarified raw washings and from sirups which have been refiltered from sirups previously taken off in the process of making hard, white granulated sugar. Color is the basis on which soft sugars are graded. They range from almost white to a deep brown.

The success of any refinery depends, to a considerable extent, upon the judgment and skill shown by the management in adjusting the processes so as to obtain from the raw stock the highest yield of those kinds and grades of sugar which will best meet the current market demand.

Cane Sugar Refining in Cuba

Cuban production, consumption, and trade in refined sugar

The production, imports, exports, and consumption of refined sugar in Cuba for the 8 years 1924 to 1931, inclusive, are summarized in table 54.

Table 54. - Refined cane sugar: Summary of production, imports, exports, and consumption in Cuba

(In short tons)

Year	Production	Imports	Total of production and imports	Exports	Local consumption 1/	Local sales reported by Cuban refineries 2/
1924	28,489	8,354	36,843	3,855	32,988	24,634
1925	49,607	1,480	51,087	3,953	47,134	45,654
1926	125,752	495	126,247	78,415	47,832	47,310
1927	186,473	324	186,797	136,173	50,624	50,300
1928	291,090	135	291,225	241,237	49,988	49,353
1929	385,780	78	385,858	335,616	50,242	50,164
1930	368,339	37	368,376	319,813	48,563	48,526
1931	427,331	16	427,347	381,074	46,273	46,257

Based on data from Bureau of Statistics, Treasury Dept., Habana, Cuba.
1/ Production plus imports less exports.
2/ Data supplied by Cuban refiners.

Location and capacity of refineries

There are 13 plants in Cuba equipped for refining cane sugar. Only 3 of these refineries have been in operation long enough or with sufficient regularity to afford representative data for a study of cost during the 3 year period, 1929-31, covered by the present investigation. The 13 Cuban plants referred to, with their locations, are as follows:

Table 58. - Refined cane sugar: List of sugar refineries in Cuba

Name and location of refinery	Company	Approximate daily capacity	Years operating and remarks
		Tons	
Refineries for which costs were obtained -			
Bone char process -			
Central Hershey, Hershey, Havana	Hershey Corporation (American)	1,250	Began refining 1926-27 In constant operation since.
Arechabala (Vezaya) Cardenas, Matanzas	J. Arechabala S.A. (Cuban)	600	In operation since 1878.
Cuban-American, Cardenas, Matanzas	Cuban-American	250	In operation more than 30 years
Refineries for which costs were not obtained -			
Bone char process -			
Central Limones, Limonar, Matanzas	Gobierno Cubano (Cuban)	170	Installation in 1927. Not operated for several years.
Vegetable char process -			
Central Toledo S.A. Marianao, Havana	Cia Azucarera (Cuban)	200	Began continuous refining in 1932.
Central Espana, Perico, Matanzas	Matanzas Sugar Co. (American)	250	Began continuous refining in 1930-31.
Central Mabay, Julia, Oriente	Cia Azucarera Mabay (Cuban)	150	Began refining in 1930-31
Vegetable char process -			
Central San Agustin, Zulueta, Santa Clara	Cia Mercantil Azucarera San Agustin (Cuban)	50	Began refining for domestic consumption in 1932.
Central Ramona, Ramona, Santa Clara		150	Operating and shipping to USA under Mabay brand.
Ideal, Luyano		50	Operating intermittently.

Table 53 - continued

Central Reforma Reforma, Santa Clara	150	Began experimental operations in April 1933.
San Antonio, Arroyo Naranja	50	Operating - some small shipments to USA.
Maestra & Martinica, Puentes Grandes	50	Has not operated for several years.
Total daily capacity (approximate) -		
All plants	3,370	
Bone char process	2,270	
Vegetable char process	1,100	
Plants costed (bone char process)	2,100	

New methods of refining in Cuba

The cost period used by the Tariff Commission in this investigation, as already indicated, was the three calendar years (or nearest business years) 1929, 1930, and 1931. The Commission found that there were four bone-char refineries located in Cuba, all of which had been installed previous to 1929. Only three of these were in operation during the cost period. Costs were secured for these three plants.

The capacity of the three refineries, on the same basis as the American refineries, (300 days operation) was approximately 500,000 tons of refined sugar in 1931, while actual production was about 360,000 tons in that year. Production in these refineries increased in 1932 and imports into the United States of refined sugar from Cuba were about 420,000 tons in 1932 and somewhat more than that in 1933.

In addition to these four bone-char refineries at least 9 vegetable char refineries were installed up to June 30, 1933, in connection with raw sugar mills. The daily capacity of these 9 refining units is 1,177 short tons of raw sugar used or 1,100 short tons of refined sugar produced. On the basis of a theoretical full operating year of 300 days (the basis used for calculating capacities for the other refineries both in Cuba and the United States) the capacity of these plants would be 353,100 short tons of raw sugar used or 330,000 short tons of refined sugar produced. If these operated during the grinding season only, which during recent years has averaged about 100 days, their output would be one third of these figures.

None of these plants were in operation for a sufficient part of the period costed by the Commission (1929-30-31) to justify it in attempting to secure separate costs for purposes of this investigation. If separate

refining costs for several of these vegetable char refining units attached to raw sugar mills were secured for the years 1932 and 1933, it is quite possible that the results would be substantially different from the costs secured for the three larger bone char plants for the three earlier years. The Commission is not in position to estimate the effect on the results. It may be useful, however, to point out some of the advantages and disadvantages claimed for the relatively small vegetable char units attached to the raw sugar mills.

Advantages claimed for refining by the continuous process

1. The vegetable char (so-called activated carbon) process of refining is inexpensive to install. The machinery and equipment is smaller and more compact than that required by the older bone char process. The addition of such equipment to a raw sugar mill does not increase the capital investment in anything like the proportion by which it is increased by the addition of bone-char filters and other apparatus of the older type. Moreover to build such an addition to a raw sugar mill, thus eliminating duplication of power plant and many other departments already features of the raw mill, would greatly reduce capital investment, depreciation, repairs and other items associated with a separate refinery not attached to a raw sugar mill.

Opposing claims are made as to the relative capital investment necessary for the installation of the two types of refinery, - the bone char vs. the vegetable char, - but there can be no difference of opinion as to the economy of adding a refining unit to a large sugar mill as against building an independent plant.

2. A refining unit apparently must be of substantial size in order to justify its construction either as an independent unit or in conjunction with a raw sugar mill. As late as 1913-14 there were 179 raw sugar mills in Cuba and they produced 2,931,157 short tons of raw sugar or an average of only about 16,000 tons per mill. There was a revolution in the character of raw sugar mills in Cuba between 1913 and 1933. In 1932-33, 125 mills in Cuba had a potential production capacity for an average season of 150 days (January to May, inclusive) of 7,913,550 tons of raw sugar or an average of more than 63,000 tons per mill. (There were in addition 47 mills not in operation during that crop year and 8 additional small mills which apparently had been dismantled). Many of the present mills in Cuba have a capacity well over 100,000 tons and a considerable number run from 150,000 tons up to 250,000 tons. From this angle of the subject it appears that there is opportunity to add refining facilities which was wanting previous to 10 years ago. Many modern raw sugar mills are provided with modern power plants and with equipment in many departments which would be of service in connection with refining facilities if installed.

3. It is claimed by some persons that improvements in transportation facilities in Cuba make it possible to transport raw sugar, sometimes in bulk, from smaller raw mills, or from those without refining facilities, to those with refining units with far greater economies than formerly existed, thus making it possible to operate the refining units (including power plant and other equipment) outside of the raw sugar season. Because of this feature great economies are claimed in general administration and overhead charges, managers, technical experts, etc. Since actual labor, including superintendence, represents less than 10 percent of refining costs, large economics are claimed for the out of season use of these refining facilities.

4. Improvements in ocean transportation are also pointed to which make it possible to ship refined sugar from the tropics with less damage and loss than formerly. Every American port becomes a refinery point, in large measure, for the inland distribution of off-shore refined sugar.

These two claims, it should be noted, apply equally to independent or separate refineries and to refining facilities added to raw sugar mills.

5. The addition of refining to the raw sugar process, it is argued, makes it possible for the raw sugar producer to increase his profit (or decrease his loss) by securing the spread between raw and refined sugar prices, which measures costs and profits of independent sugar refineries.

Disadvantages claimed - Factors which operate to prevent the growth of refining by the continuous process

1. Others assert, however, that it is not at all certain that it is advantageous to add the refining of sugar as an adjunct of a raw sugar central, except in unusual cases. The process, they hold, can only be "continuous" for three or four months, during the grinding seasons, and for the rest of the time the mill has the problem of finding its raws. The freight on Cuban railroads does not permit these raws to be drawn from a great distance. They must be bagged, unless expensive equipment is installed for hauling in bulk, and they must be bought in a restricted market while the United States refiners have sugar from many sources to draw upon.

2. It is asserted also that there are technical facts which make the continuous process less advantageous than it might seem. The bagasse only suffices to run the mill during the grinding season and some fuel oil may have to be bought even then. A large additional water supply is necessary for refining and the Cuban supply in many areas is hardly adequate as to

either quantity or quality. At least one of the continuous process mills inspected used the water from cane juice as a large part of the supply for raw sugar production but when refining was installed, it had to have a large additional supply. The water from cane would be available only three or four months, of course.

3. It is stated further that practically everything the Cuban producers buy in the way of machinery, tools, mill supplies, cotton bags for refined sugar, etc., comes from the United States. They have to pay duties on most of these things and the freight rates on Cuban railroads are high. Thus the centrals in the interior would have a disadvantage in cost of raw materials as well as in the cost of shipping their refined sugar.

4. It has been asserted that the low wages in Cuba give the refiners there an advantage over the refiners in the United States. However, the labor item in the cost of refining sugar is comparatively small. During the three year period covered by the Commission's cost investigation, the item of direct labor and superintendence was only 5 cents out of a total refining cost in Cuba of approximately 58 cents per 100 pounds, and the comparable item in the domestic cost was less than 9 cents out of approximately 66 cents. Some labor enters into the items of maintenance and repairs and general expenses, but even if this be added to the item of direct labor, the proportion is still small. The management of the technical processes and the efficient use of the heavy and elaborate machinery employed in the production of both raw and refined sugar influence costs in sugar refining much more than the item of direct labor.

5. It is asserted further that, although the investment required to install a refining plant using the vegetable carbon process is much less than to build a bone-char refinery, the cost is, nevertheless, such as to deter many raw sugar producers from attempting the refining business.

6. Sugar refining requires much more expert technical supervision than does the production of raw sugar. It is urged that the expense of maintaining the technical staff and the greater care and attention which the owners would have to give the business will likely deter many from embarking upon such an enterprise.

7. Small tropical refineries could hardly go into the business of putting up package, soft, confectioners, lump, and other special forms of sugars and this is a large and growing part of the business of several of the United States refineries. Those who do not put up package sugars are at some disadvantage in competition with those who offer a "full line."

From the above more or less conflicting statements (and doubtless there are others on both sides not listed above), it appears not only that a cost study of a half dozen of the newer type of continuous process, vegetable char refineries would be necessary in order to give a full picture of the probable present and early future competitive situation as it pertains to sugar refined in raw cane-sugar producing areas, but also that a much more complete economic and engineering survey would be necessary. Even had the Commission secured costs from the one or two of these newer smaller types of refining units which were operating during one year of the period covered by its investigation, their weight, being for one year only, when consolidated with the costs of the three large refineries for a three-year period, would have been negligible. Hence, the Commission limited its cost study to the bone-char refineries referred to.

It should be noted also that two refineries in Louisiana use the vegetable char process, but their costs were not used in computing the average cost of refining in the United States, both because of the difficulty of segregating the costs of production of raw sugar from the refining costs and because of the negligible effect which their inclusion would have had on the average costs for the entire domestic refining industry.

Marketing Refined Sugar

The greater part of the domestic trade in refined sugar is in hard granulated sugar. The product is standardized and at any one time one price prevails throughout the market with allowances for difference in transportation costs. The larger domestic refining companies carry a "line" of assorted sugars (including soft sugar and white granulated sugar prepared in tablet and other forms) packed in containers of various types and sizes. The companies which carry such an assorted line have a certain advantage in marketing. Beet sugar factories and "off-shore" producers usually market only standard white, granulated sugar. The cost comparison between domestic and Cuban sugar has been made on the basis of white granulated sugar put up in 100-pound bags.

Classes of customers and methods of sale

Buyers of sugar may be divided into two general groups, namely, (1) distributors, who buy sugar for resale as sugar, and (2) manufacturers, who use sugar as an ingredient in making some other food product. No statistics are available to measure the proportion of sugar marketed to each of these two groups, although it has been estimated that 60 percent or more is marketed through distributors for household use.

Prices in different markets

The price of refined sugar at any point in the United States is based on the price quoted at seaports on the Atlantic, Gulf, and Pacific coasts where cane sugar refineries are located. Generally speaking, this quotation is uniform at any one time at all seaboard points where cane sugar is refined. At other places the price basis is the seaboard price quotation plus freight "application", which until recently has, in theory at least, been based on the lowest all-rail freight rate to the

point in question from any seaboard cane refinery. Within the last few years, however, improved facilities for transportation by water and by motor truck have been the cause of breaking down prices based upon all-rail rates. The amount of "freight absorption", i.e., the share of the transportation cost paid by the refiner instead of by the buyer, has been large. Domestic beet sugar factories sell their sugar at prices determined mainly by the price of cane sugar in the same market. As most of the beet sugar factories are situated in the interior, they have an advantage in the matter of transportation costs over cane sugar in their local market - an advantage that disappears as they seek more distant markets. In the same market, the wholesale quotation for beet sugar is usually 10 to 20 cents per 100 pounds less than that prevailing for cane sugar, depending upon the state of the market. Off-shore sugars, that is, cane sugar refined in Cuba or in the insular areas of the United States, usually sell at a differential of 5 to 10 cents per 100 pounds less than cane sugar refined in the domestic refineries.

Market moves

The great bulk of refined sugar sold is "booked" on market "moves." These take place when some refiner announces an advance in price to become effective the next day or the day following and other refiners and importers also make the advance. During the day or two intervening, buyers take advantage of their opportunity to enter orders at the old price. When a decline is announced, practically no transactions take place unless it looks as if the market were to go higher later. It is estimated that approximately 80 percent of all refined sugar is sold on the days when announcements are made of price changes.

COMPARATIVE COSTS OF REFINED SUGAR

Basis of Costs

Relation of duty on refined to duty on raw sugar

The position of domestic and Cuban refiners in competition with one another depends not on the rate of duty on refined sugar as such but on the difference between the duty on refined and the duty on raw sugar. At present the duty on (Cuban) raw sugar of 96 degree test is 2.00 cents per pound and the duty on 100 degree (Cuban) refined sugar, 2.12 cents, the margin being 0.12 cent. If the duty on raw sugar should be reduced, the duty on refined sugar could be reduced correspondingly without affecting the relative position of the domestic and Cuban refiners.

It takes very nearly exactly 107 pounds of raw sugar of 96 degree test to produce 100 pounds of refined sugar. During each of the three years covered by the present investigation the average test of the raw sugar used by the Atlantic and Gulf coast refiners of the United States was 96.6 degrees, and the average quantity of such raw sugar required per 100 pounds of refined sugar was 106.2 pounds. When these figures are adjusted to the basis of 96 degree sugar they give between 106.8 and 106.9 pounds of raw per 100 pounds of refined. For the Cuban refineries covered by the cost investigation the average quantity of raw, reduced to the basis of 96 degrees, was slightly greater than 107 pounds per 100 pounds of refined sugar.

It follows from what has been stated that in order that the duty on a pound of 100 degree sugar should equalize domestic and foreign costs, it should be equal to the duty on 1.07 pounds of 96 degree sugar increased by any excess of the domestic cost of production (including delivery) of

refined sugar, exclusive of the duty on raw, over the cost of the Cuban product, or diminished by any excess of Cuban over domestic cost. In the following analysis, therefore, the duty on raw sugar has been subtracted from the domestic costs; these are then compared with the Cuban costs in order to ascertain how much should be added to or subtracted from the duty on 1.07 pounds of 96 degree sugar.

Bases of cost comparison

There are two possible ways of calculating costs for the purpose of this comparison. The first is to compare the total domestic cost of refined sugar (exclusive of duty on raws) with the total foreign cost. The other is to assume that, apart from the duty, the cost of raw sugar to the domestic refiners is the same as to the Cuban refiners, and to compare only the other factors of cost, namely (a) the cost of the refining process, (b) the loss of raw sugar in the process of conversion and the value of by-products, and (c) transportation cost.

The Commission has chosen the first of these methods for two reasons: (a) because it is impossible to ascertain accurately costs exclusive of cost of raw sugar, and (b) because if, as a matter of fact, the cost of raw sugar to domestic refiners and to Cuban refiners were not the same, the difference in such costs should enter into the determination of the refined sugar duty. As to the first point, the difficulty of comparison arises from the geographic facts of the location of the domestic and Cuban refineries and of the places at which they buy their raw sugar. The records of the refineries show the total cost of the raw sugar they use delivered at the refinery and it is not practicable to subtract the transportation from a common point of origin of the raw sugar. As to the

second point, witnesses at the hearing before the Commission expressed differences of opinion regarding the relative prices paid by Cuban and domestic refiners for raw sugar purchased in Cuba. It would, of course, be possible that not merely accidental and temporary causes but more or less permanent causes should tend to give an advantage to the one group or the other in the purchase of raw sugar.

Domestic refineries included in the cost comparison

Practically no Cuban refined sugar is shipped to the Pacific coast. The competition of the Cuban product directly affects only the domestic refineries situated on the Atlantic and Gulf coasts. The comparison of costs has, therefore, been made only with respect to these refineries; they, however, represent over nine tenths of the cane sugar refining industry of the United States.

Method of computing cost of raws to Cuban refiners

One of the Cuban refining concerns covered by the cost comparison (the largest) itself produces a large fraction of the raw sugar it uses. Although its costs of producing raw sugar were ascertained, and included with those of other Cuban producers in Part I of this report, the value of this sugar as a factor in the refining costs was entered by the Commission, not at the cost of production, but at the average market price at the time it was taken into the refinery, which was less than the cost of production.

Costs Exclusive of Inland Transportation in the United States

All of the domestic refineries concerned in the cost comparison are situated on or near tidewater, namely at the ports of Boston, New York, Philadelphia, Baltimore, Savannah, and in the vicinities of Louisiana and Texas ports. The Cuban refined sugar enters the country at these same ports and to some extent at other Atlantic and Gulf ports. Apart from any difference between the domestic and the Cuban product with respect to the costs of transportation within the United States itself, it is evident that the Cuban sugar, before it can compete in United States markets, must be transported to Atlantic and Gulf seaports. For this reason costs are first calculated, in table 55, with reference to domestic refined sugar f.o.b. refineries and Cuban refined sugar c.i.f. Atlantic and Gulf ports, and thereafter the difference in costs of transportation within the United States itself is determined and a final comparison made with this difference taken into consideration.

Table 55 summarizes the costs of refined sugar, exclusive of duty, at Atlantic and Gulf ports of the United States. Further details are presented in tables 56, 57, and 58. In table 55 the domestic costs are based on the price paid for all raw sugar used whatever its origin.

It will be seen that the cost of Cuban refined sugar (including delivery to United States ports) in 1929 exceeded that of the sugar produced by the domestic refineries by 0.086 cent per pound; in 1930 the domestic cost exceeded the Cuban by 0.026 cent, and in 1931 the Cuban cost was 0.043 cent greater than the domestic.

If the cost of the sugar produced by domestic refineries had been based upon the price paid for Cuban raws instead of upon the price of all raws melted, the domestic cost would have been slightly lower in 1929 and 1930 and consequently the differences between Cuban costs and domestic costs of refined sugar would have been slightly changed from the figures given above in two of the three years; namely, the excess of the Cuban over the domestic cost would have been 0.107 cent in 1929 and 0.006 cent in 1930. The cost difference would have been the same on either basis in 1931.

Table 55. Refined Sugar. Summary comparison of Domestic costs (exclusive of duty on raw sugar) and Cuban costs, f.o.b. Atlantic and Gulf ports of United States:

	Cents per pound of refined sugar					
	1929		1930		1931	
	Domestic	Cuban	Domestic	Cuban	Domestic	Cuban
Cost of all raws used (Cuban, domestic and insular) less bag credit, at refinery	4.049	1.950	3.699	1.459	3.591	1.322
Less-						
U.S. duty on raws then in force 1/	1.898	-	2.021	-	2.143	-
Molasses credit	.052	.037	.053	.047	.031	.016
Net cost exclusive of U.S. duty	2.099	1.913	1.625	1.412	1.417	1.306
Cost of refining, including imputed interest on investment (at 6 percent)	.687	.653	.672	.594	.619	.508
Transportation of Cuban sugar from refineries to U.S. Atlantic and Gulf ports		.306		.265		.265
Total cost ex raw sugar duty at U.S. Atlantic and Gulf ports	2.786	2.872	2.297	2.271	2.036	2.079
Excess of Cuban costs 1/		.086		2/ -.026		.043

1/ Rate on raws (from Cuba) of test 96.6 degrees, which was the average test during each year, multiplied by 1.062 pounds, which was the quantity used in each year to make 1 pound of refined. For 1930 the rate used is the simple average of the rate under the act of 1922, effective until June 17 (substantially half of the year) and the rate under the act of 1930.

2/ Excess of domestic costs.

Cost of refining process

Table 56 shows the details of the cost of refining operations in the United States and in Cuba. It will be seen that domestic costs of the items labor and superintendence, maintenance and repairs, general and administrative expense, and warehousing and shipping were materially higher than the Cuban costs, but the Cuban refineries had higher expenses than the domestic for fuel, depreciation, packing, and certain other items. Partly for the reason that the capacity of the domestic refineries much exceeds their actual production, the investment of the domestic concerns is much larger, in proportion to their output, than that of the Cuban refineries, and consequently the item of imputed interest is much higher.

Table 56. - Refined sugar: Comparison of refining costs of Atlantic and Gulf coast refineries and Cuban refineries, 1929 to 1931, inclusive, and simple average for the 3-year period

(per 100 pounds)

	1929		1930		1931		Simple average 3 years	
	Domestic	Cuba	Domestic	Cuba	Domestic	Cuba	Domestic	Cuba
Refining cost:								
Labor and superintendence	$0.0893	$0.0558	$0.0880	$0.0547	$0.0863	$0.0414	$0.0879	$0.0506
Power (including fuel)	.0866	.1089	.0848	.1001	.0764	.0885	.0826	.0992
Maintenance and repairs	.0376	.0206	.0368	.0278	.0337	.0247	.0360	.0244
Supplies	.0307	.0283	.0316	.0250	.0271	.0179	.0298	.0237
General refinery expense	.0161	.0253	.0151	.0215	.0156	.0171	.0156	.0215
Depreciation	.0460	.0697	.0471	.0687	.0426	.0655	.0452	.0680
General and administrative expense	.0492	.0358	.0524	.0338	.0528	.0338	.0515	.0345
Warehousing and shipping	.0209	.0136	.0225	.0086	.0217	.0106	.0217	.0109
Packing cost, 100 pound bags	.1669	.2024	.1532	.1670	.1217	.1333	.1473	.1675
Total, excluding interest	.5433	.5609	.5315	.5072	.4779	.4328	.5176	.5003
Imputed interest	.1432	.0918	.1402	.0865	.1411	.0749	.1415	.0844
Total, including interest	.6865	.6527	.6717	.5937	.6190	.5077	.6591	.5847

Costs of transportation from Cuba to United States ports

Table 57 shows the details of the transportation of Cuban sugar. The item of transportation cost within Cuba itself results chiefly from the rail rate from one of the refineries, which is situated in the interior, to Cuban ports. 1/

Table 57. - Refined sugar: Details of transportation costs on sugar from refineries in Cuba to Atlantic and Gulf ports of the United States
(Per 100 pounds)

	1929	1930	1931	Weighted average	Simple average
Expenses on shipments of refined sugar in Cuba -					
Inland freight	$0.0843	$0.0729	$0.0848	$0.0814	$0.0807
Lighterage	.0350	.0303	.0250	.0295	.0301
Other	.0031	.0039	.0048	.0040	.0039
Total	.1224	.1071	.1146	.1149	.1147
Ocean transportation from Cuba to United States -					
Freight	.1673	.1485	.1424	.1516	.1527
Marine insurance	.0171	.0099	.0074	.0110	.0115
Total	.1844	.1584	.1498	.1626	.1642
Total inland and ocean charges	.3068	.2655	.2644	.2775	.2789

1/ The averages shown in the table were computed by adding the transportation costs of the several refineries and dividing by their combined shipments; the costs per pound for the single refinery situated in the interior were materially higher.

Analysis of factors in domestic and Cuban costs

The four principal factors in costs of refined sugar are (a) the price of raw sugar, (b) the quantity of raw sugar lost in refining and the amount of the molasses credit partly offsetting that loss, (c) the expenses of refining, and (d) transportation expenses. Tables 55 and 56 made no distinction between items (a) and (b), the costs given for raw sugar representing the cost of the total quantity required to produce a pound of refined sugar including the quantity lost. Those tables also dealt with the cost of raw sugar delivered at the respective refineries, domestic and Cuban, without segregating the transportation costs on raws. Table 58 presents a more detailed analysis of the costs summarized in table 55, distinguishing, so far as practicable, the four cost factors above specified. In this table, as in table 55, the cost of raws to the domestic refiners represents the price paid for all raws (Cuban, domestic, and insular) whereas, the cost of raws to Cuban refiners is of course the price of Cuban sugar only.

Table 58. - Refined sugar: Analysis of factors in domestic and Cuban costs, f.o.b. Atlantic and Gulf ports of United States

(Cents per pound)

	1929		1930		1931	
	Domestic	Cuban	Domestic	Cuban	Domestic	Cuban
Cost of raws						
Average test of raws used - degrees	96.6	96.3	96.6	96.3	96.6	96.3
Quantity of raws per pound of refined - pounds	106.2	107.0	106.2	107.0	106.2	107.0
Cost (less bag credit) per pound of refined	4.049	1.950	3.699	1.459	3.591	1.322
Cost per pound of raws	3.813	1.822	3.483	1.364	3.381	1.236
Less - Duty on raws then in force	1.787		1.903		2.018	
Freight on raws from Cuban ports	.145		.126		.124	
Plus - Freight on refined derived from 1 pound of raws (0.935 lb.) from Cuban refineries to Cuban ports		.114		.100		.107
Net cost of raws as of Cuban ports, per pound of raws	1.881	1.936	1.454	1.464	1.239	1.343
Excess of Cuban over domestic cost	0.055		0.010		0.104	
Loss of raws						
Quantity lost, per pound of refined - pounds	.062	.070	.062	.070	.062	.070
Value of loss, on basis of net cost of raws at Cuban ports	.116	.136	.090	.102	.077	.094
Less - Molasses credit	.052	.037	.053	.047	.031	.016
Net value of loss	.064	.099	.037	.055	.046	.078
Excess of Cuban over domestic cost	0.035		0.018		0.032	
Refining						
Cost, including imputed interest on investment	.687	.653	.672	.594	.619	.508
Excess of domestic over Cuban cost	0.034		0.078		0.111	
Transportation						
From Cuban ports to U. S. ports (domestic, for 1.062 pounds of raws; Cuban for 1 pound refined)	.154	.184	.134	.158	.132	.150
Excess of Cuban cost	0.030		0.024		0.018	
Total cost (exclusive of U. S. duty) at Atlantic and Gulf ports	2.786	2,872	2.297	2.271	2.036	2.079
Excess of Cuban over domestic cost	0.086		-0.026		0.043	

Although the average prices of raws to the domestic refiners used in tables 55 and 58 are for all raws melted (Cuban, domestic, and insular) the prices of Cuban raws alone used by domestic refiners compared with the raw sugar used by Cuban refiners are of some interest.

The average test of the raws used by the Cuban refiners during the period covered by the investigation was slightly lower than that of the raws used by the domestic refiners; therefore, it would be expected, other things being equal, that the price paid by the Cubans would be slightly lower, but this difference in test is so small that the price difference resulting from it would be insignificant.

There has been considerable variation from year to year in the relative position of the domestic and Cuban refiners as regards the price paid for the Cuban raw sugar. In each year the average price paid by the Cuban refiners for sugar delivered at their refineries was slightly lower than the price paid by the domestic refiners for Cuban sugar as of Cuban ports (that is, the cost to them delivered in the United States minus the average freight rate from Cuban ports). For example, in 1929 the cost to the Cuban refiners on this basis was 1.822 cents per pound and the cost to the domestic refiners, 1,881 cents. The difference in these costs was greatest in 1930 and was very small in 1931. The average cost of raw sugar to the Cuban refiners, however, does not represent average cost at seaports and is not directly comparable with the cost to the domestic refiners. The largest Cuban refinery is situated in the interior, and while it may on that account pay a lower price for raws than a purchaser at a seaport would have to pay, this is much more than offset by the freight charges on the refined sugar from the interior to

the seaports. This transportation ... item 1/ has, therefore, been added to the Cuban costs of raw sugar in order to make a more significant comparison between the price paid for raws by the Cuban and domestic refiners.

With this adjustment it appears that in each of the three years the Cuban refiners were at a disadvantage as compared with the domestic refiners with respect to the price paid for raw sugar, the difference in this respect ranging from 0.04 cent per pound in 1930 to 0.105 cent in 1931.

The Cuban refiners are also at a disadvantage with respect to the loss of raws. The quantity lost (only partly by reason of the lower test of the raw sugar used) is slightly larger than for the domestic refiners, and the value of the by-product molasses is materially lower.

The cost of transporting refined sugar from Cuban ports to the United States is somewhat greater than transporting the equivalent amount of raw sugar.

The only factor with respect to which the Cuban refiners have in each year had lower costs than the domestic refiners is that of cost of the refining process and, as already pointed out, the difference in this respect was largely due to a much smaller item of imputed interest (see table 56). The excess of domestic over Cuban cost of the refining process increased from year to year during the period covered by the cost comparison.

1/ See footnote on page 163 as to the method of computing the average.

Transportation of Refined Sugar within the United States

The costs of sugar above set forth are exclusive of costs of transportation to final consuming markets within the United States; that is to say, the domestic costs are f.o.b. refinery, all the refineries being situated on or near tidewater on the Atlantic and Gulf coasts, and the Cuban costs are for sugar delivered at the Atlantic and Gulf ports of the United States where the sugar actually entered.

Principal markets and general transportation situation

The refined sugar produced by domestic Atlantic and Gulf coast refineries, as well as that produced by Cuban refineries, is marketed throughout the eastern half (in area as distinguished from population) of the United States. On account of the competition of beet sugar produced in the Upper Mississippi Valley and the lakes region and in the irrigated areas of the west, the consumption of refined cane sugar in the Middle West (such States as Illinois, Wisconsin, Iowa, and Minnesota) is much less, relative to the population, than further east where beet sugar does not penetrate in substantial quantities.

It is evident that the domestic refiners can have no advantage over the Cuban refiners with respect to transportation costs from the seaports to interior markets. Cuban sugar, landed at any of the ports where the domestic refineries are situated, can be transported from them at the same freight rates as the domestic refiners must pay.

It is equally evident that as regards a large proportion of the markets the Cuban refiners can have no advantage over the domestic refiners as regards inland transportation costs. So far as the cheapest method by which the Cuban producers can reach any given market is by shipping

through a port where there is a refinery, the cost of inland transportation of the Cuban product is the same as that of the domestic product shipped from that port. Since there are refineries at all the principal ports of the North Atlantic coast - Boston, New York, Philadelphia, and Baltimore - the States served by these ports both coastal and inland, are equally accessible to domestic and Cuban sugar, except small areas served by minor New England ports. Another exception which may be of growing importance is the shipments to the Great Lakes via the Hudson or St. Lawrence Rivers. On the other hand, the Cuban concerns can land sugar at any seaport along the South Atlantic and Gulf coasts, whereas the domestic refineries along those coasts are situated only at three seaports, Savannah, New Orleans, and Galveston (Texas City). To any market where the cost of transportation is less from a port than from any refining center, the Cuban sugar has an advantage. About three tenths of the Cuban sugar marketed in the United States during the period covered by the cost investigation was marketed in areas reached from South Atlantic and Gulf ports where this advantage in transportation cost was present.

Method of calculating transportation costs

There were in 1929 twenty-four States (besides the District of Columbia) in which both cane sugar produced by domestic refineries on the Atlantic and Gulf coasts and Cuban refined sugar were sold in competition. This number of States increased to twenty eight in 1930 and twenty nine in 1931. In each of these States representative cities were selected by the Commission, usually three in number. For the Cuban product the freight rate to each selected city was ascertained from the seaport having the lowest

rate. From the records of the domestic refiners those refining centers which actually made shipments to each of the cities were ascertained, and a weighted average of the rates from these centers was computed to each city.

The selected cities were treated as representative of the States in which they were situated. The method was to make a simple average of the rates to the cities in the given State (adding the rates and dividing by the number of cities) and to set against this average the total shipments of sugar to the State, not the shipments to the selected cities alone.

Comparison of transportation costs

Table 59 shows for each year the average freight rates on domestic and Cuban sugar to the representative cities in the several States and the difference between them. Table 60 shows the quantities of sugar shipped by the domestic and the Cuban refiners, respectively, to the several States. Table 61 summarizes the differences in rates and the percentage of domestic and Cuban shipments to each group of States.

A.

B.

C.

Table 59. - Refined sugar: Transportation rates from Atlantic and Gulf refineries and ports to representative markets in each state where Cuban sugar was sold

Note. Where no rates are shown there were no Cuban shipments to the State during the year

(Cents per 100 pounds)

	1929			1930			1931		
	Domestic sugar	Cuban sugar	Excess of domestic	Domestic sugar	Cuban sugar	Excess of domestic	Domestic sugar	Cuban sugar	Excess of domestic
A. States showing practically no advantage to Cuban shipments -									
Massachusetts	$0.148	$0.140	$0.008	$0.149	$0.140	$0.009	$0.150	$0.140	$0.010
Connecticut	.162	.160	.002	.161	.160	.001	.161	.160	.001
New York	.153	.150	.003	.150	.150	0	.152	.150	.002
New Jersey	.120	.120	0	.120	.120	0	.120	.120	0
Pennsylvania	.200	.200	0	.200	.200	0	.200	.200	0
Delaware	.130	.130	0	.130	.130	0	.130	.130	0
Maryland	.160	.160	0	.160	.160	0	.160	.160	0
District of Columbia	.140	.140	0	.140	.140	0	.140	.140	0
Mississippi	.300	.300	0	.300	.300	0	.300	.300	0
Louisiana	.180	.180	0	.180	.180	0	.180	.180	0
Michigan	.430	.430	0	.430	.430	0	.432	.430	.002
Ohio	.402	.400	.002	.400	.400	0	.401	.400	.001
West Virginia	.420	.420	0	.420	.420	0	.420	.420	0
Average excess	---	---	.002	---	---	.001	---	---	.002
B. States showing an advantage to Cuban refiners due to cross-shipments by domestic refiners -									
Texas				.367	.320	.047	.371	.320	.051
Missouri	.518	.470	.048	.522	.470	.052	.521	.470	.051
Wisconsin				.519	.490	.029	.537	.490	.047
Illinois	.470	.450	.020	.472	.450	.022	.471	.450	.021
Indiana	.487	.450	.037	.491	.450	.041	.495	.450	.045
Nebraska							.579	.515	.064
Kentucky	.509	.450	.059	.507	.450	.057	.496	.450	.046
Tennessee	.406	.380	.026	.410	.380	.030	.410	.380	.030
Arkansas							.487	.430	.057
Iowa	.572	.540	.032	.569	.540	.029			
Minnesota				.615	.600	.015	.614	.600	.014
Average excess	---	---	.032	---	---	.035	---	---	.038
C. States showing an advantage to Cuban refiners due to imports at non-refinery ports -									
Virginia	.230	.145	.085	.230	.145	.085	.230	.145	.085
North Carolina	.318	.190	.028	.319	.190	.028	.321	.190	.031
South Carolina	.278	.180	.098	.273	.180	.093	.273	.180	.093
Georgia	.260	.190	.070	.273	.190	.083	.268	.190	.078
Florida	.282	.165	.117	.282	.165	.117	.283	.165	.118
Alabama	.340	.280	.060	.336	.280	.056	.336	.280	.056
Average excess	---	---	.075	---	---	.078	---	---	.077

Table 60.- Refined sugar: Shipmen

covered by the cos

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	Domesti
A. States showing practically no difference in rates -	
Massachusetts	567.2
Connecticut	93.5
New York	1,545.8
New Jersey	374.9
Pennsylvania	1,053.0
Delaware	14.3
Maryland	309.1
District of Columbia	45.5
Mississippi	115.0
Louisiana	173.0
Michigan	253.8
Ohio	550.0
West Virginia	90.5
Total	5,185.6
B. States showing an advantage to Cuban refiners due to cross-shipments by domestic refiners:	
Texas	-
Missouri	52.5
Wisconsin	-
Illinois	260.0
Indiana	193.5
Nebraska	-
Kentucky	81.2
Tennessee	184.5
Arkansas	-
[illegible]	[illegible]

C.

Table 60.- Refined sugar: Shipments, by all domestic Atlantic and Gulf refineries and by Cuban refineries covered by the cost inquiry, to the states to which both shipped sugar

Blanks in both columns indicate that no Cuban sugar was shipped to the state during the year

(Millions of pounds)

	1929			1930			1931		
	Domestic	Cuban	Total	Domestic	Cuban	Total	Domestic	Cuban	Total
A. States showing practically no difference in rates -									
Massachusetts	567.2	.3	567.5	557.0	.1	557.1	532.0	.1	532.1
Connecticut	93.5	.1	93.6	123.8	.1	123.9	128.0	1.2	129.2
New York	1,545.8	45.1	1,590.9	1,467.5	66.0	1,533.5	1,421.0	118.6	1,539.6
New Jersey	374.9	.5	375.4	388.6	2.6	391.2	393.4	14.4	407.8
Pennsylvania	1,053.0	91.7	1,144.7	1,076.3	86.2	1,162.5	989.0	76.0	1,065.0
Delaware	14.3	.1	14.4	13.8	.6	14.4	12.8	.3	13.1
Maryland	309.1	96.5	405.6	242.5	56.3	298.8	277.3	100.9	378.2
District of Columbia	45.5	1.3	46.8	62.4	1.5	63.9	68.7	5.9	74.6
Mississippi	115.0	2.4	117.4	121.2	.4	121.6	117.0	4.5	121.5
Louisiana	173.0	10.3	183.3	203.4	30.0	233.4	176.3	43.9	220.2
Michigan	253.8	6.2	260.0	278.0	9.0	287.0	231.5	20.6	252.1
Ohio	550.0	8.0	558.0	578.0	6.0	584.0	559.6	10.3	569.9
West Virginia	90.5	1.5	92.0	55.6	.4	56.0	111.2	2.2	113.4
Total	5,185.6	264.0	5,449.6	5,168.1	259.2	5,427.3	5,017.8	398.9	5,416.7
B. States showing an advantage to Cuban refiners due to cross-shipments by domestic refiners:									
Texas	-	-	-	284.4	5.0	289.4	242.9	11.3	254.2
Missouri	52.5	.9	53.4	48.3	.1	48.4	55.4	6.9	62.3
Wisconsin	-	-	-	95.0	5.0	100.0	75.6	15.6	91.2
Illinois	260.0	11.3	271.3	300.7	21.3	322.0	306.3	20.3	327.6
Indiana	193.5	18.7	212.2	196.4	27.2	223.6	222.9	10.6	233.5
Nebraska	-	-	-	-	-	-	1.7	.1	1.8
Kentucky	81.2	10.0	91.2	75.1	4.4	79.5	84.7	6.8	91.5
Tennessee	184.5	9.2	193.7	203.0	7.0	210.0	176.0	14.0	190.0
Arkansas	-	-	-	-	-	-	73.3	.3	73.6
Iowa	44.0	.1	44.1	44.5	.6	45.1	-	-	-
Minnesota	-	-	-	34.0	.1	34.1	45.5	.4	45.9
Total	815.7	50.2	865.9	1,281.4	70.7	1,352.1	1,284.3	86.3	1,370.6
C. States showing an advantage to Cuban refiners due to imports at non-refinery ports -									
Virginia	127.0	23.0	150.0	129.3	26.0	155.3	125.0	59.2	184.2
North Carolina	106.7	8.7	115.4	110.4	7.4	117.8	96.0	19.3	115.3
South Carolina	56.2	10.8	67.0	58.2	17.0	75.2	55.0	29.0	84.0
Georgia	168.4	39.0	207.4	176.0	37.0	213.0	170.0	35.0	205.0
Florida	91.0	26.8	117.8	98.4	27.1	125.5	100.6	32.0	132.6
Alabama	97.5	10.6	108.1	109.0	13.0	122.0	118.1	22.0	140.1
Total	646.8	118.9	765.7	681.3	127.5	808.8	664.7	196.5	861.2
Total shipments	6,648.1	433.1	7,081.2	7,130.8	457.4	7,588.2	6,966.8	681.7	7,648.5

Table 61. - Refined sugar: Average excess of cost of transporting domestic sugar over Cuban sugar

	1929	1930	1931
	Cents per pound		
Average excess of rates on domestic over rates on Cuban sugar to states in			
Group A	0.002	0.001	0.002
Group B	.032	.035	.038
Group C	.075	.078	.077
Weighted average 1/	.014	.016	.017
Percent distribution of total shipments (to states to which both domestic and Cuban sugar was shipped) which went to states of specified group:		Percent	
Combined domestic and Cuban shipments -			
Group A	77	71	71
Group B	12	18	18
Group C	11	11	11
Domestic shipments -			
Group A	78	72	72
Group B	12	18	18
Group C	10	10	10
Cuban shipments -			
Group A	61	57	58
Group B	12	15	13
Group C	27	28	29

1/ Weighted by percentages immediately below, based on combined shipments of domestic and Cuban sugar.

Examination of table 59 shows that in each year there were a number of states to which the average rates of transportation for the domestic product and the Cuban product were either precisely the same or different by an insignificant fraction, less than 1 cent per 100 pounds. These are states which are supplied by the domestic production and the Cuban product through the same or substantially the same channels of transportation; mostly through North Atlantic seaports.

There is another group of states to which the average freight rate from the domestic refineries was higher than the freight rate for the Cuban product from the most accessible port, the explanation being not a difference between the rate for Cuban sugar from the port having the lowest rate and the rate from the domestic refinery having the lowest rate (usually at the same port), but the fact that part of the domestic shipments were from refineries having less favorable freight rates. If all of the domestic sugar sold in these states had come from the refinery most accessible from the standpoint of freight charges, there would have been little or no difference as compared with the Cuban product. It will be noted that most of these are Middle Western States where considerable beet sugar is consumed and where both the domestic and the Cuban cane-sugar refineries sell much less sugar than in the eastern states.

There remains a group of states, along the South Atlantic and Gulf seaboard, to which the average freight charge from the domestic refineries is considerably higher than that on the Cuban product from the nearest seaport. In these states an advantage is gained by the Cubans by shipping through ports at which there are no refineries - such ports as Norfolk, Wilmington, Charleston, Jacksonville, Miami, and Mobile. The

average excess of the domestic freight charge over the Cuban for these states ranges from about 6 to 13 cents per 100 pounds.

As shown in table 61, the group of States in which the inland transportation charges for the domestic sugar and for the Cuban sugar are either the same or substantially the same accounted during each of the three years for over 70 percent of the entire quantity of refined cane sugar marketed in the eastern half of the United States (that is, the combined sales of the domestic Atlantic and Gulf coast refineries a and the Cuban refineries). The six States in which the Cuban refineries enjoy a considerable advantage with respect to freight rates accounted for 11 percent of the total in each year. Considering these three groups of States together, it appears that the average advantage of the Cuban refiners in the matter of inland transportation costs was 0.014 cent per pound in 1929, 0.016 cent in 1930, and 0.017 cent in 1931.

Comparison of Domestic and Cuban Costs Adjusted for Difference in Costs of Inland Transportation

Table 62 summarizes the differences between domestic and Cuban costs of refined sugar. That is to say, it shows the costs (exclusive of the United States duty on raw sugar) as of Atlantic and Gulf ports, the differences in cost of inland transportation, and the combined total differences.

It will be seen that the Cuban cost exceeded the domestic cost (exceeding raw duty) in two of the three years, the excess being 0.072 cent per pound in 1929 and 0.026 cent in 1931. In 1930, on the other hand, the domestic exceeded the Cuban cost by 0.042 cent.

Table 62 also shows the relationship of the costs to the present duty on raw and refined sugar. Thus, if there is added to the domestic costs ex-duty the amount of the present duty (Cuban rate) on 1.07 pounds of 96 degree sugar, the quantity required to produce 1 pound of refined, the excess of domestic over Cuban costs becomes 2.068 cents per pound in 1929, 2.182 cents in 1930, and 2.11¼ cents in 1931. These figures represent cost differences comparable with the present duty of 2.12 cents on 100 degree sugar from Cuba.

Table 62. - Refined sugar: Summary cost comparison including difference in inland transportation costs in the United States

(Cents per pound)

	1929	1930	1931
Domestic -			
Cost f.o.b. ports, excluding United States duty on raws	2.786	2.297	2.036
Add excess of domestic over Cuban cost of inland transportation to markets in United States	.014	.016	.017
Total	2.800	2.313	2.053
Cuban -			
Cost c.i.f. ports	2.872	2.271	2.079
Excess of domestic (+) or Cuban (-) cost, being amount by which duty on refined should be greater (+) or less (-) than the duty on 1.07 pounds of 96° sugar in order to equalize costs	-.072	+.042	-.026
Duty on 1.07 pounds of 96° raw sugar	2.140	2.140	2.140
Duty on raw plus or minus cost difference	2.068	2.182	2.114

PART III - COSTS OF PUERTO RICAN AND PHILIPPINE RAW SUGAR

Introduction

For the purposes of determining the duty on sugar under section 336 of the tariff act, the costs of Puerto Rican and Philippine sugar cannot under the law be taken into consideration. These costs are, however, of much importance for the purpose of any general consideration of policy with respect to the sugar tariff. The Commission has therefore ascertained the costs of production and transportation of the sugar produced in these two insular areas for the same periods of time and by the same methods as for Louisiana, Hawaiian and beet sugar. Investigators were sent to Puerto Rico and the Philippines and they obtained costs of production of sugar cane directly from the farmers and costs of converting cane into raw sugar from the sugar mills. As in other areas the mill costs, and the costs of production of company-grown sugar cane, were ascertained for three years, but the costs of production of sugar cane by independent farmers could be obtained only for the last two of these years.

Both Puerto Rican sugar and Philippine sugar enter the United States free of duty. Since the price of raw sugar in the United States is substantially the price of Cuban raw sugar plus the duty of 2 cents per pound (on 96 degree raw) the Puerto Rican and Philippine producers receive for their product 2 cents per pound more than the Cuban producers receive, less the difference in transportation charges. It costs very little more (2 or 3 cents per hundred pounds) to transport Puerto Rican sugar to United States refineries than Cuban sugar. On the average the cost of transportation of raw sugar from Cuban ports to United States ports during the 3-year period covered by the investigation was about 0.13 cent per pound and the corresponding average from Philippine ports was about 0.29 cent per pound, a difference of about 0.16 cent.

Costs of Production of Sugar Cane in Puerto Rico

As in Louisiana, Hawaii, and Cuba, part of the sugar cane of Puerto Rico is produced by the same concerns which manufacture raw sugar while the remainder is produced by independent farmers known, as in Cuba, as colonos. Costs of company-grown cane were ascertained for the 3 years, 1929-30, 1930-31, and 1931-32, and costs of colono cane for the last two of these years. For the purpose of determining the average cost of production of all cane in 1929-30 it was assumed that the cost for colono cane in that year bore the same proportion to the cost in 1930-31 as was shown for company-grown cane. Inasmuch as colono cane in 1929-30 represented only about 40 percent of the total cane ground by the reporting mills, any error in this assumption would affect the total costs of producing sugar but little.

Representativeness of the costs ascertained

The 3 years 1929-30 to 1931-32 were normal as regards the sugar cane crop of Puerto Rico. The yields for the 3 years taken together averaged substantially the same as for the 5-year period ending 1932-33.

Table 63 shows data with respect to the farms covered by the cost inquiry. Costs were obtained from 125 colono farms in 1930-31 and 127 in 1931-32, a proportion sufficiently high to be fairly representative. The acreage of the colono farms costed represented 8 percent of the total acreage in the islands (including company-grown cane) in both 1930-31 and 1931-32. The acreage of company cane for which costs were obtained represented between 25 and 30 percent of the totals for the island in the 3 years covered. The yields per acre on the colono farms for which costs were obtained were somewhat lower than the average for the island as a whole but the yields for the company farms were considerably above that average.

Table 63.- Puerto Rican sugar cane: Data relating to farms covered by the cost investigation

Average yield on farms covered by the cost inquiry, tons per acre -	
Colono farms -	
1930-31	24.8
1931-32	28.0
Company farms -	
1929-30	36.7
1930-31	32.7
1931-32	37.4
Number of farms producing sugar by the census of 1929-30	6,502
Number of colono farms covered by cost inquiry -	
1930-31	125
1931-32	127
Total acres of cane harvested in Puerto Rico -	
1929-30	251,018
1930-31	254,239
1931-32	279,165
Acres of cane harvested on farms covered by cost inquiry -	
Colono farms -	
1930-31	20,400
1931-32	21,014
Company farms -	
1929-30	67,899
1930-31	75,542
1931-32	76,545
Acreage of cane harvested on colono farms, according to period of growth -	
1930-31 -	
Plant cane (planted in same year) -	6,980
Stubble cane (planted in preceding years)	13,420
1931-32 -	
Plant cane	7,111
Stubble cane	13,903

Costs of production on colono farms

A considerable part of the work on many colono farms in Puerto Rico is performed by the owner and his family. In such cases the compensation for this work was estimated on the basis of the going rate in the community for hired labor.

Costs per acre in each area were computed as simple averages (adding the costs per acre for the several farms and dividing by the number of farms). The costs for the several districts as thus computed were combined into a general average for the island as a whole by the use of weights corresponding to the quantity of cane from each district consumed by the mills reporting to the Commission.

Table 64 shows by items the average cost of production of sugar cane on colono farms in Puerto Rico as a whole, and the total cost of production for each district. The general average was $4.79 per ton of cane in 1930-31 and $4.15 in 1931-32. These costs include imputed interest on investment.

Table 64.- Puerto Rican sugar cane: Cost of production on farms of colonos

Cost item	Cost per acre		Cost per cuerda 1/	
	1930-31	1931-32	1930-31	1931-32
Cost per acre and per cuerda -				
Cultivation	$23.45	$23.24	$22.74	$22.54
Irrigation	6.77	5.00	6.57	4.85
Harvesting	27.95	30.57	27.11	29.65
Supervision	8.34	7.86	8.09	7.62
Taxes	2.83	2.71	2.75	2.63
Fertilizer	16.81	15.14	16.31	14.69
Other	5.73	5.13	5.55	4.98
Development	15.75	15.65	15.28	15.18
Total without land charge	107.63	105.30	104.40	102.14
Land charge (interest at 6%)	11.24	10.69	10.90	10.37
Total with land charge	118.87	115.99	115.30	112.51
Yield per acre and per cuerda (tons)	24.83	27.96	24.09	27.12

	Cost per ton	
	1930-31	1931-32
Average cost of all areas 2/	$4.79	$4.15
Fajardo	4.84	4.73
Caguas	5.13	4.06
Colosso	4.77	4.58
Constancia-Cambalache	4.78	3.81
Guanica (Rochelaise)	4.42	4.17
Mercedita	4.64	3.80
Rufina	4.64	3.80
Aguirre	4.46	3.75
Cost per ton, excluding imputed interest, all areas	4.334	3.765
Imputed interest, per ton	.452	.382

1/ One cuerda equals 0.97 acre.

2/ It should be observed that these costs are not for individual companies but are averages for manyfarms in each area.

Costs of production of company-grown cane

The sugar mill companies in Puerto Rico which produce cane have complete records of costs, and these were ascertained for a representative number of mills by the Commission. Table 65 shows the costs for the 3 years covered by the investigation. For the period as a whole (simple average of the annual averages) the cost of sugar cane on company farms was $5.279 per ton, including imputed interest on investment at 6 percent.

Purchases of imported cane

Some of the sugar cane crushed by the Puerto Rican mills included in the cost inquiry is imported from the Dominican Republic. The imports for the three years covered by the investigation were as follows:

Crop year	Tons	Value	Duty per ton
1929-30	236,667	$827,368	$1.00
1930-31	9,607	21,617	2.50
1931-32	284,088	609,918	2.50

The quantities involved are relatively small and for the purpose of determining the cost of production of raw sugar in Puerto Rico on the basis of cost of production of cane, no regard has been paid to this imported cane; in other words, the cost of all the cane purchased by the sugar mills has been taken at the cost of producing cane by colonos in Puerto Rico, as ascertained by the Commission. In the cost as computed on the basis of price paid for purchased cane, the imported cane, of course, is taken into account.

Table 65.- Puerto Rican sugar cane: Cost of production on company farms

	1929-30	1930-31	1931-32
Acres harvested	57,899	75,542	76,545
Tons produced	2,491,421	2,470,966	2,859,542
Average yield per acre, tons	36.7	32.7	37.4
Costs per acre:			
Cultivating	$61.90	$51.48	$43.11
Harvesting	25.43	21.23	22.13
Supervision	7.98	7.49	7.63
Seed cane	7.71	6.16	4.95
Fertilizer	22.37	19.98	18.70
Other supplies	1.83	2.68	3.58
Repairs	4.21	3.83	5.37
Drainage and irrigating	11.16	10.61	10.16
Insurance	.44	.50	.73
Taxes	6.80	5.31	5.46
Depreciation	6.90	6.02	4.82
Livestock	5.91	4.96	4.08
Clerical	.50	.48	.49
Other expense	3.42	2.94	3.74
General and administrative	9.61	8.38	7.81
Total	176.17	152.05	142.76
Less sundry income	6.97	5.42	4.96
Net cost excluding int.	169.20	146.63	137.80
Imputed interest on investment at 6 percent 1/	37.86	36.58	33.90
Total cost per acre	207.06	183.21	171.70
Total cost per ton	$5.642	$5.603	$4.591
Cost per ton excluding imputed int.	4.610	4.485	3.685
Imputed interest	1.032	1.118	.906

1/ Includes rent paid for land owned by others.

Costs of Production of Raw Sugar in Puerto Rico

There are 43 sugar mills in Puerto Rico but 3 of these were not in operation in 1932, the year when the representatives of the Commission visited the island. Cost records of 18 of the mills in operation were obtained. The mills were so selected with reference to location and capacity that their average costs are believed to represent very closely the general averages for all raw sugar in Puerto Rico. These mills accounted for 60 percent of the total output of raw sugar in the island in 1929-30, 58 percent in 1930-31, and 54 percent in 1931-32. About 60 percent of the cane they consumed was company grown and 40 percent purchased from colonos. (See table 66.)

The methods of computing sugar costs in Puerto Rico were the same as in the other areas covered by the investigation. The basic calculation takes as the cost of cane the costs of growing it, both on company farms and on colono farms, as ascertained by the Commission. In addition a calculation is presented on the basis of the price paid by the mills for purchased cane. The costs are summarized in table 67. The table shows that, on the basis of the cost of production of all the cane crushed, the total cost of raw sugar, f.o.b. mill, averaged 2.991 cents per pound in 1929-30, 3.323 cents in 1930-31, and 2.705 cents in 1931-32, the higher figure for the second of these years being due chiefly to a smaller extraction of sugar per ton of cane, as shown in table 66. The simple average of these three annual cost figures is 3.006 cents per pound. These costs include imputed interest, at 6 percent, on the investment in cane production and in the mills. Excluding interest the three-year average cost was 2.542 cents, as shown in table 68.

The costs of production of sugar on the basis of the price paid for purchased cane did not differ greatly from those based on the costs of producing such cane, being somewhat higher in 1929-30, and somewhat lower in the other two years. For the 3 years together the simple average of the cost f.o.b. factory on this basis was 2.969 cents per pound.

Table 66- Puerto Rican Cane Sugar: Data relating to operations of mills covered by cost inquiry

	1929-30	1930-31	1931-32
Number of mills costed	18	18	17
Production of sugar by all Puerto Rican mills, 1,000 lbs.	1,732,214	1,575,590	1,984,860
Production by mills costed (equivalent as 96 degree sugar) 1,000 lbs.	1,045,898	914,982	1,070,003
Percent of total	60.4	58.1	53.9
Cane ground by mills costed, short tons	4,283,374	4,070,487	4,579,156
Yield of sugar (96° basis) per ton of cane, pounds	244.2	224.8	233.7
Production of molasses - 1,000 gallons	21,545	22,576	23,155
Per ton of cane -			
Gallons	5.03	5.55	5.06
Equivalent (pounds)	58.9	64.9	59.2
Value per gallon, net, cents	7.43	2.34	1.97

Table 67. - Puerto Rican cane sugar: Cost of production of raw sugar, f.o.b. mill and delivered to refineries in continental United States

(All cost items in cents per pound of 96 degree sugar, except as indicated)

	1929-30	1930-31	1931-32	Simple average, 3-years
Cane data				
Tons of cane ground -				
Company cane	2,479,060	2,459,631	2,832,808	-
Colono cane	1,804,314	1,610,856	1,746,348	
Total	4,283,374	4,070,487	4,579,156	-
Cost of production of cane, including imputed interest, per ton -				
Company cane (table 65) 3/ -	$5.644	$5.603	$4.586	$5.278
Colono cane (table 64)	4.825	4.786	4.147	4.587
Weighted average	$5.300	$5.280	$4.418	$4.999
Equivalent per pound of sugar obtained (cents)	2.170	2.349	1.891	2.137
Costs on basis of cost of production of cane				
Cost of cane (as above)	2.170	2.349	1.891	2.137
Other cane costs	1/	1/	1/	
Transportation of cane to mill 2/-				
Company railroad operation	.055	.060	.049	-
Depreciation on railroad equipment	.020	.022	.018	-
Freight paid to other carriers	.117	.115	.119	-
Total transportation	.192	.197	.186	.192
Factory operations -				
Mill expense	.157	.169	.135	-
Packing cost	.102	.090	.074	-
Repairs and maintenance	.088	.106	.078	-
Taxes and insurance	.061	.068	.058	-
Depreciation	.092	.106	.080	-
General and administrative	.159	.158	.131	-
Total factory operations -	.659	.697	.556	.637
Total gross cost	3.021	3.243	2.633	2.966
Less credits for:				
Molasses	.153	.058	.043	.085
Miscellaneous income	.010	.010	.003	.008
Net cost	2.858	3.175	2.587	2.873
Imputed interest on investment in transportation equipment and factory at 6 percent	.133	.148	.118	.133
Total cost at factory, including interest	2.991	3.323	2.705	3.006
Cost on basis of price paid for purchased cane				
Price paid for purchased cane, per ton	$4.96	$4.38	$3.77	$4.37
Average of cost of production of company cane and price paid for purchased cane -				
Per ton of cane	$5.36	$5.12	$4.27	$4.92
Equivalent per pound of sugar, cents	2.193	2.277	1.829	2.100
Factory cost of raw sugar, on this basis, including imputed interest	3.014	3.251	2.643	2.969
Delivered cost				
Transportation to Puerto Rican ports	.113	.121	.114	.116
Total cost (basis cost of production of cane) at Puerto Rican ports	3.104	3.444	2.819	3.122
Transportation Puerto Rican ports to United States refineries	.163	.162	.156	.160
Total cost at United States refineries including imputed interest	3.267	3.606	2.975	3.282
Total cost at United States refineries on basis of price paid for colono cane	3.290	3.534	2.913	3.246

1/ Less than 0.0005 cent per pound.

2/ All transportation items computed by dividing expenditure by total pounds of sugar, although each item actually incurred with reference to only part of the cane.

3/ These figures differ slightly from those in table 65 because the weight assigned to the cost of each company-farm is the quantity of cane ground instead of the total quantity produced, part of which is retained for seed.

Table 68. - Puerto Rican cane sugar: Costs of production of raw sugar excluding and including interest on investment in cane production and milling

Costs without interest exclude interest on borrowed money as well as on capital owned. Imputed interest taken at 6 percent of total investment including that financed by borrowing.

(cents per pound of sugar, except as indicated)

	1929-30	1930-31	1931-32	Simple average
Costs without interest				
Production of cane, per ton				
Company-grown (table 65) 1/	$4.629	$4.483	$3.691	$4.268
Colono-grown (table 64)	4.397	4.334	3.765	4 165
Weighted average	4.531	4.424	3.719	4.225
Equivalent per pound of sugar obtained (cents)	1.855	1.968	1.592	1.805
Transportation of cane and factory operations, less molasses credits (table 67)	.688	.826	.696	.737
Total cost, f.o.b. sugar mill	2.543	2.794	2.288	2.542
Imputed interest at 6 percent on investment in -				
Production of cane, per ton				
Company-grown 1/	$1.015	$1.120	$0.895	$1.010
Colono-grown	.428	.452	.382	.421
Weighted average	.769	.856	.699	.775
Equivalent per pound of sugar (cents)	.315	.381	.299	.331
Transportation (by company railways) and milling	.133	.148	.118	.133
Total	.448	.529	.417	.464
Cotst including interest				
Cane production	2.170	2.349	1.891	2.137
Transportation and milling	.821	.974	.814	.869
Total, f.o.b. mill	2.991	3.323	2.705	3.006
Costs delivered to Puerto Rican ports				
Without interest	2.656	2.915	2.402	2.658
With imputed interest	3.104	3.444	2.819	3.122
Costs delivered at United States ports				
Without interest	2.819	3.077	2.558	2.818
With imputed interest	3.267	3.606	2.975	3.282

1/ See footnote 3 to table 67.

Costs of Puerto Rican sugar delivered to the United States

The average cost of transportation from the sugar mills in Puerto Rico to the ports of that island was ascertained directly from the records of the mills. It amounted to 0.113 cent per pound in 1929-30, 0.121 cent in 1930-31, and 0.114 cent in 1931-32 (see table 67).

The great bulk of the raw sugar produced in Puerto Rico is refined at Atlantic and Gulf coast ports of continental United States. The freight rates to all these refining points are substantially the same. The rates were ascertained from the records of the Puerto Rican sugar mills and checked by the records of refineries in the United States and of the transportation companies. As shown in table 67 the average cost of transportation from Puerto Rican ports to ports of continental United States was 0.163 cent per pound in 1929-30, 0.162 cent in 1930-31, and 0.156 cent in 1931-32. The total cost of Puerto Rican raw sugar delivered to the Atlantic and Gulf ports (including imputed interest) was thus 3.267 cents in 1929-30, 3.606 cents in 1930-31, and 2.975 cents in 1931-32, the simple average for the 3 years being 3.282 cents per pound.

These delivered costs of Puerto Rican raw sugar may be compared with those of Cuban raw sugar as shown in Part I of this report, namely, 2.060 cents in 1929-30, 1.979 in 1930-31, and 1.730 in 1931-32, averaging 1.923 cents for the 3 years.

Costs of Production of Sugar Cane in the Philippines

Unlike the other cane producing areas covered by the Commission's investigation the production of sugar cane in the Philippine Islands is practically all on farms independent of the sugar mills. As in other areas, it was found impossible to obtain costs of production on such farms except for the year during which the investigation was conducted (1931-32) and the immediately preceding year. For the purpose of estimating the total cost of raw sugar during the year 1929-30, it was assumed that the cost of production of cane per ton in that year was the same as in 1930-31. Inquiry indicated that there had been little change in wages or other cost items and that the yields per acre were not materially different in the two years.

Representativeness of the cost investigation

There has been a gradual improvement in the methods of cultivating sugar cane in the Philippine Islands so that on the average the yield per acre, as well as the proportion of sugar derived from the cane, has risen gradually. Growing conditions during the three years 1929-30 to 1931-32 were substantially normal, and the yields per acre, taking account of the general upward tendency, were normal.

The production of sugar cane in the Philippines is chiefly on the islands of Luzon and Negros. Costs were obtained from farms on both of these islands. The total number of farms costed was 153 for the 1930-31 season and 188 for the 1931-32 season. These farms accounted for 6.5 percent of the total production of sugar cane in the islands in the first of these years and 9.4 percent in the second. The yields of cane per acre on the farms covered by the cost inquiry were slightly higher than the average for all farms. Table 69 shows the principal facts concerning the farms covered by the cost inquiry and the representativeness of the years included.

Table 69. - Philippine sugar cane: Data regarding farms covered by the cost inquiry

Average yield of cane per acre on all farms in Philippines - tons -	
1930-31	17.15
1931-32	21.12
Average yield on farms covered by the cost inquiry -	
1930-31	17.51
1931-32	22.99
Number of farms producing sugar -	
Total in Philippines (approximate)	10,975
Covered by the cost inquiry -	
1930-31	153
1931-32	188
Acres of sugar cane harvested -	
Total in the Philippines -	
1930-31	458,093
1931-32	463,266
On farms covered by the cost inquiry -	
1930-31	27,336
1931-32	35,864
Planted in same year (plant cane) -	
1930-31	17,114
1931-32	21,147
Planted in previous years (ratoon or stubble cane) -	
1930-31	10,222
1931-32	14,717

Costs of production of cane

Since many of the farms in the Philippines which produce sugar cane also produce other crops in important quantities, the costs applicable to sugar were ascertained separately. Many of the planters had satisfactory records. For others, items relating to costs were obtained on questionnaires and were supplemented by information furnished by the sugar mills and from other sources. The sugar mills had accurate information for the individual farms as to the acreage in cane, the quantity produced, and the cost of fertilizers. For most operations there are customary rates of charge in each district which could be ascertained.

The costs of production of cane were ascertained for four areas in Luzon and three in Negros. Within each area the costs were averaged by giving to each farm equal weight (adding the costs per acre for the several farms and dividing by the number). For the islands as a whole the general average cost was computed by assigning to the cost for each district a weight corresponding to the quantity of cane from that district consumed by the mills reporting to the Commission.

Table 70 shows the costs of production of cane by items for the Philippines as a whole and the total cost for each of the seven districts. The average cost for all the farms covered was $3.27 per ton in 1930-31 and $2.67 in 1931-32. These figures include imputed interest on investment at 6 percent, amounting to $0.33 per ton in the first year and $0.28 in the second.

Table 70.- Philippine sugar cane: Farm cost of production

Hectare = 2.471 acres; Picul = 139.44 pounds; Peso = 50 U.S. cents

	Cost per acre U.S. dollars		Cost per hectare Philippine pesos	
	1930-31	1931-32	1930-31	1931-32
Cultivation	12.71	12.85	62.82	63.50
Irrigation	10.98	11.71	54.26	57.87
Harvesting	11.86	14.69	58.62	72.60
Supervision	5.63	6.08	27.82	30.04
Taxes	.10	.10	.50	.50
Fertilizer	.80	.81	3.96	4.00
Other	7.59	6.85	37.50	33.86
Development	1.75	2.25	8.64	11.12
Total cost excluding interest	51.42	55.34	254.12	273.49
Imputed interest at 6 percent	5.94	6.22	29.36	30.74
Total cost including interest	57.36	61.56	283.48	304.23
Yield per acre and per hectare (tons)	17.51	22.99	43.27	56.81
Piculs of sugar per hectare			69.51	92.48

	Cost per ton of cane		Cost per picul of sugar	
	1930-31	1931-32	1930-31	1931-32
Average cost of all areas -	Dollars	Dollars	Pesos	Pesos
Without interest	2.942	2.398	3.662	2.985
Imputed interest	.333	.276	.414	.344
Total	3.275	2.674	4.076	3.329
Cost, including interest, by districts -				
Luzon -				
Nasugbu	2.90	2.52	3.76	3.54
Calamba	2.82	2.45	3.44	2.96
Pampanga	3.83	2.62	4.56	3.23
Bamban-Tarlac	4.12	2.73	4.98	3.63
Negros -				
East Negros	3.13	2.42	3.72	2.73
North Negros	3.68	2.80	4.49	3.27
West Negros	2.98	2.74	3.64	3.20

Costs of Production of Philippine Raw Sugar

There are 45 sugar mills in the Philippine Islands. Costs were obtained for 30 of these mills, but this number included most of the large mills so that the proportion of the total production covered by the cost inquiry was much higher, over 90 percent for the three years taken together.

The basic calculation of sugar costs by the Commission, in all areas covered by the investigation, takes the item for cane at the cost of production, as ascertained by the Commission's investigation, rather than at the price paid for cane. As already stated, it was assumed that the cost of producing cane in each district of the Philippines in 1929-30 was the same as in 1930-31. It was not found practicable, in the case of the Philippines, to ascertain the cost of raw sugar on the basis of the price paid for cane by the mills, for the reason that in most cases the cane was paid for in sugar rather than in cash. The farmers under this practice received as payment for the cane ordinarily either 50 or 60 percent of the sugar obtained from it.

Table 71 shows the cost of production of raw cane sugar in the Philippine Islands as ascertained by the Commission. It will be seen that the cost f.o.b. mill, including imputed interest on investment in the farms and mills at 6 percent, was 2.431 cents per pound in 1929-30, 2.505 cents in 1930-31, and 2.042 cents in 1931-32, the simple average for the three years being 2.326 cents. On the average for the period the cost of producing the cane represented about 58 percent of the total cost of sugar. Table 72 shows that, excluding interest on investment both in cane production and milling, the average cost, f.o.b. mill for the three-year period was 1.969 cents per pound.

Table 71. - Philippine Cane Sugar: Cost of production of raw sugar, f.o.b. mill and delivered to refineries in continental United States

(All cost items in cents per pound of 96 degree sugar, except as indicated)

	1929-30	1930-31	1931-32	Simple average 3 years
Data of mill operations				
Number of mills costed	30	30	30	-
Production of all sugar mills in the Philippines, 1,000 pounds	1,733,030	1,752,402	2,201,418	-
Production of mills costed (equivalent of 96 degree sugar) 1,000 pounds	1,556,977	1,606,674	2,027,583	-
Percent of total	89.8	91.7	92.1	-
Cane ground by mills costed, ---- tons	6,524,648	7,172,887	8,944,118	-
Yield of sugar (96° basis) per ton of cane ---------- pounds	239	224	227	-
Production of molasses -				
Total quantity -------- 1,000 gallons	30,210	36,276	43,260	-
Per ton of cane -				
Gallons	4.63	5.06	4.83	-
Equivalent (pounds)	54.2	59.2	56.5	-
Value of molasses per gallon (cents)	3.24	2.09	1.71	-
Costs on basis of cost of production of cane				
Cost of production of cane, including imputed interest on investment, per ton	1/ $3.290	$3.275	$2.674	$3.080
Equivalent per pound of sugar obtained (cents)	1.377	1.460	1.176	1.338
Transportation of cane: 2/				
Company railroad operation	.111	.112	.098	-
Depreciation on company-railroad equipment	.092	.092	.072	-
Freight paid to other carriers	.023	.025	.023	-
Total transportation	.226	.229	.193	.216
Factory operations -				
Mill expense	.125	.128	.105	-
Packing cost	.123	.101	.078	-
Repairs and maintenance	.067	.066	.056	-
Taxes	.014	.013	.012	-
Insurance	.007	.008	.007	-
Depreciation	.123	.127	.112	-
General and administrative expense	.189	.183	.159	-
Total factory operations	.648	.626	.529	.601
Total gross cost	2.251	2.315	1.898	2.155
Less molasses credit	.063	.047	.036	.049
Net cost	2.188	2.268	1.862	2.106
Imputed interest at 6 percent on investment in transportation equipment and mills	.243	.237	.180	.220
Total cost, at factory, including imputed interest	2.431	2.505	2.042	2.326
Cost of delivery to United States				
Transportation from mills to Philippine ports	.116	.096	.093	.102
Total cost at Philippine ports, including imputed interest	2.547	2.601	2.135	2.428
Transportation from Philippine ports to Atlantic ports of United States	.309	.285	.275	.289
Total cost at United States Atlantic ports - including imputed interest	2.856	2.886	2.410	2.717

1/ Costs in each district taken as the same per ton as in 1930-31; the general average differs slightly from 1930-31 owing to different proportions of cane from the several districts in the total quantity crushed by the reporting mills.

2/ Each transportation item is computed by dividing the expenditure by total pounds of sugar, although each item is actually incurred with reference to only part of the cane.

Table 72. - Philippine cane sugar: Cost of production of raw sugar, excluding and including interest on investment in cane production and milling

Costs without interest exclude interest paid on borrowed money as well as on capital owned. Imputed interest taken at 6 percent of total investment, including that financed by borrowing

(Cents per pound of sugar except as indicated)

	1929-30	1930-31	1931-32	Simple average, 3 years
Costs without interest -	1/			
Production of cane (Table 70) per ton	$2.955	$2.942	$2.398	$2.765
Equivalent per pound of sugar obtained (cents)	1.235	1.313	1.053	1.201
Transportation of cane and factory operations, less molasses credit (Table 71)	.811	.808	.686	.768
Total cost, f.o.b. sugar mill	2.046	2.121	1.739	1.969
Imputed interest, at 6 percent, on investment in -	1/			
Production of cane, per ton	$0.335	$0.333	$0.276	$0.315
Equivalent per pound of sugar (Cents)	.142	.147	.123	.137
Transportation (by company railways) and milling	.243	.237	.180	.220
Total	.385	.384	.303	.357
Costs including imputed interest -				
Cane production	1.377	1.460	1.176	1.338
Transportation and milling	1.054	1.045	.866	.988
Total, f.o.b. mill	2.431	2.505	2.042	2.326
Costs delivered to Philippine ports -				
Without interest	2.162	2.217	1.832	2.071
With imputed interest	2.547	2.601	2.135	2.428
Costs delivered to U. S. ports -				
Without interest	2.471	2.502	2.107	2.360
With interest	2.856	2.886	2.410	2.717

1/ See footnote to Table 71.

Transportation to and delivered costs at United States refineries

The great bulk of the sugar produced in the Philippines is marketed in continental United States and is shipped to this country as raw sugar. Most of the Philippine raw sugar goes to ports on the Atlantic Coast.

Costs of transportation from the sugar mills to the Philippine ports were obtained directly from the records of the mills. Costs of ocean freight and insurance from Philippine ports to the Atlantic Coast of the United States were also obtained from the records of these companies, and were checked by the records of refineries in the United States and of transportation companies. For the three years covered by the cost investigation (1929-30 to 1931-32) the inland cost of transportation in the Philippines amounted to 0.116, 0.096, and 0.093 cent per pound, respectively. The ocean charges for these years were 0.309, 0.285, and 0.275 cent per pound, respectively. The total cost of Philippine raw sugar delivered at the Atlantic Coast refineries of the United States was thus 2.856 cents per pound in 1929-30, 2.886 cents in 1930-31, and 2.410 cents in 1931-32, the simple average for the three years being 2.717 cents per pound. (See table 71). These costs include imputed interest, at 6 percent, on the investment in cane production and in the sugar mills.

In comparison with these delivered costs for Philippine sugar the costs of the Cuban product, delivered to the same markets, for the three years were respectively, 2.060, 1.979, and 1.730 cents per pound, averaging 1.923 cents.

PART IV - COMPARISON OF COSTS OF SUGAR IN THE UNITED STATES, ITS SEVERAL INSULAR AREAS, AND CUBA

Costs of Raw Cane Sugar

The costs of production of raw sugar in the several sugar-producing areas of the United States have been presented in separate tables in parts I and III of this report. It will now be convenient to arrange these costs for the four areas combined. These weighted average costs, while they cannot be used for the purpose of determining the duty on sugar under provisions of section 336 of the tariff act, are of significance for comparison with the prices of raw sugar and for other purposes of general analysis.

Table 73 compares the principal items of the cost of production and transportation to market of the raw cane sugar produced in Louisiana, Hawaii, Puerto Rico, and the Philippine Islands, together with the weighted average total cost. For all the areas the item for sugar cane is the cost of production of the cane and not the price paid for it.

The table distinguishes between costs without interest charges and costs including an imputed interest charge of six percent on the investment in the several stages of production. For the purposes of section 336, in order to determine the proper rate of duty, it is the practice of the Commission to compare domestic and foreign costs including imputed interest. For certain other uses which may be made of the data, however, significance attaches to costs from which interest is excluded. It should be noted particularly that neither costs excluding all interest nor costs including imputed interest on all investment correspond to the ordinary accounting conception of costs.

That conception, which is ordinarily also the conception of the business man in examining his own cost data, is that cost includes interest actually paid on borrowed money but does not include any return on the capital owned by the concern itself, return on such capital being designated as profit, whether the return be greater or less than the ordinary rate of interest on borrowed money. In the computations of the Commission showing costs exclusive of interest, as summarized in table 73, interest on borrowed money (whether on bank loans or other short-time obligations or on long-term bonds) has been excluded. On the other hand, in the computation of costs including interest, the interest item represents six percent on the total capital used in the business, whether borrowed or owned by the producers (in the case of land the interest charge includes any rent paid for land owned by others). The accounting conception of costs, therefore, including interest on borrowed money, but not on the owner's capital, would give a figure intermediate between the two figures of costs as calculated by the Commission.

Table 73.- Raw cane sugar: Cost of production in United States and outlying areas

Note: Costs without interest exclude interest paid on borrowed money as well as interest on capital owned. Imputed interest taken at 6 percent of total investment including that financed by borrowing

(Cents per pound of raw sugar)

	1929-30	1930-31	1931-32	Simple average
Louisiana				
Cost of production of cane -				
Excluding interest	3.03	2.44	2.39	2.62
Including imputed interest	3.68	2.91	2.88	3.15
Transportation of cane and milling -				
Excluding interest	1.14	1.13	1.19	1.15
Including imputed interest	1.34	1.34	1.40	1.36
Total cost f.o.b. factory -				
Excluding interest	4.17	3.57	3.57	3.77
Including imputed interest	5.02	4.25	4.27	4.51
Transportation to New Orleans	.15	.13	.12	.13
Total delivered cost -				
Excluding interest	4.32	3.70	3.69	3.90
Including imputed interest	5.17	4.38	4.39	4.64
Total interest	.85	.68	.70	.74
Hawaii				
Cost of production of cane -				
Excluding interest	2.12	1.97	1.86	1.99
Including imputed interest	2.50	2.32	2.19	2.34
Transportation of cane and milling -				
Excluding interest	.59	.57	.52	.56
Including imputed interest	.67	.65	.59	.64
Total cost, f.o.b. factory -				
Excluding interest	2.71	2.53	2.38	2.54
Including imputed interest	3.17	2.97	2.78	2.98
Transportation to San Francisco and New York	.30	.31	.33	.31
Total delivered cost -				
Excluding interest	3.01	2.84	2.71	2.85
Including imputed interest	3.47	3.28	3.11	3.29
Total interest	.46	.44	.40	.44
Puerto Rico				
Cost of production of cane -				
Excluding interest	1.85	1.97	1.59	1.80
Including imputed interest	2.17	2.35	1.89	2.14
Transportation of cane and milling -				
Excluding interest	.69	.82	.70	.74
Including imputed interest	.82	.97	.82	.87
Total cost f.o.b. factory -				
Excluding interest	2.54	2.79	2.29	2.54
Including imputed interest	2.99	3.32	2.71	3.01
Transportation to U. S. Atlantic ports	.27	.28	.27	.27
Total delivered cost -				
Excluding interest	2.82	3.07	2.56	2.81
Including imputed interest	3.27	3.60	2.98	3.28
Total interest	.45	.53	.42	.47
Philippine Islands				
Cost of production of cane -				
Excluding interest	1.23	1.31	1.05	1.20
Including imputed interest	1.38	1.46	1.18	1.34
Transportation of cane and milling -				
Excluding interest	.81	.81	.69	.77
Including imputed interest	1.05	1.05	.86	.99
Total cost f.o.b. factory -				
Excluding interest	2.04	2.12	1.74	1.97
Including imputed interest	2.43	2.51	2.04	2.33
Transportation to U. S. Atlantic ports	.43	.38	.37	.39
Total delivered cost -				
Excluding interest	2.47	2.50	2.11	2.36
Including imputed interest	2.86	2.89	2.41	2.72
Total interest	.38	.38	.30	.36
Weighted average delivered cost for the four areas -				
Excluding interest	2.90	2.87	2.52	2.76
Including imputed interest	3.37	3.33	2.91	3.20
Interest	.47	.46	.39	.44
Weights used (1,000 tons) -				
Louisiana (production)	200	184	156	180
Hawaii (production)	925	996	1,025	982
Puerto Rico (shipments to United States)	729	699	851	760
Philippine Islands (shipments to United States)	752	762	974	829

Source: Cost data from tables 23a and 25a of part I, and 68 and 72 of part III.

Table 73 shows that the total cost of Louisiana raw sugar f.o.b. factory for the 3-year period averaged 3.77 cents per pound exclusive of all interest and 4.51 cents including imputed interest at 6 percent. The corresponding figures for Hawaiian sugar were 2.54 and 2.98 cents, respectively; for Puerto Rican sugar, 2.54 and 3.01 cents; and for Philippine sugar, 1.97 and 2.33 cents per pound. Imputed interest amounted to 0.36 cent per pound in the Philippines, 0.44 cent in Hawaii, 0.47 cent in Puerto Rico, and 0.74 cent in Louisiana.

The cost of transportation from the sugar mills to the refining centers in continental United States is naturally much higher from all the outlying areas than from Louisiana and considerably higher for the Philippine product than for Hawaiian and Puerto Rican sugar. Including imputed interest the total cost, delivered at refineries in continental United States, for the 3-year period, averaged 4.64 cents for Louisiana sugar, 3.29 cents for Hawaiian, 3.28 cents for Puerto Rican and 2.72 cents for Philippine sugar. For the four areas taken together and for the 3-year period taken as a whole, the average cost delivered at refineries of continental United States was 2.76 cents per pound exclusive of interest and 3.20 cents including imputed interest, the average interest charge (on the investment both in the production of cane and in sugar mills) being 0.44 cent per pound.

These average delivered costs of cane sugar produced in the United States and its insular areas may be compared with the cost of Cuban raw sugar delivered to United States refineries, which, excluding interest, averaged 1.58 cents for the 3-year period, and including interest 1.92 cents. Separate figures for Cuban raw sugar during each year are presented in table 75.

For 1931-32, the latest year covered by the cost investigation, the costs of raw cane sugar in the United States and in all its outlying areas were considerably lower than the average for the 3-year period. For

that year the cost of Louisiana sugar delivered to refinery, including imputed interest, was 4.39 cents, of Hawaiian sugar, 3.11 cents, of Puerto Rican sugar, 2.98 cents, and of Philippine sugar, 2.41 cents per pound. The delivered cost of the Cuban product in that year, including interest, was 1.73 cents per pound.

Costs of Cane Sugar on Refined Basis

Costs of Louisiana, Hawaiian, Puerto Rican, and Philippine sugar

Since the prices of refined sugar are more familiar to the general public than the prices of raw sugar, it will be convenient to present also the costs of production of cane sugar in the United States and its insular areas on a refined basis. This may be done by adding to the costs of the raw sugar produced in the several areas, including delivery in continental United States, the average cost of converting raw into refined sugar in the United States. Since the raw sugar from several different sources is mixed together in the operations of most of the refineries, it is impossible to determine the separate cost of refining the raw sugar which originates in the different areas.

The cost of refining is set forth in Part II of this report. It includes two major items, the cost of the refining operations themselves and the value of the loss of raw sugar in the process, 1.07 pounds of raw sugar (96 degree) being required to produce 1 pound of refined. This loss,of course, varies in value with the price of the raw sugar. For the purposes of the present calculation the value of the loss of raw sugar, as an item of refining cost, is taken on the basis of the average price actually paid for raw sugar by the refineries during each year, not on the basis of the cost of producing the raw sugar; the price paid is, of course, affected by the rate of duty on sugar.

For the 3-year period taken together the loss of raw sugar in the refining process, for all refineries in the United States combined, was equivalent to 0.16 cent per pound of refined sugar (after crediting the value of molasses). The cost of refining operations, exclusive of inter-

est, averaged 0.52 cent per pound, and the interest item, imputed at 6 percent on the investment in the refineries, amounted to 0.14 cent per pound. The total cost of refining for the 3-year period, including interest, thus averaged 0.82 cent per pound.

Table 74 shows for the several producing areas of the United States the costs of raw cane sugar, with and without interest, including delivery to refineries in continental United States, the costs of refining with and without interest, and the total cost on a refined basis. The average cost of the Louisiana sugar for the 3-year period, on a refined basis, was 4.58 cents per pound excluding interest and 5.46 cents including imputed interest. For the product of the Philippines, where the costs were the lowest, the corresponding costs exclusive of interest averaged 3.04 cents and including imputed interest 3.54 cents per pound. For the four areas taken together the average cost during this period, exclusive of interest, was 3.44 cents per pound; the interest charge, covering all stages of production, was 0.58 cent, and the total cost including interest, 4.02 cents.

Cost of Cuban raw sugar plus cost of refining in the United States

Details regarding the costs of refining in Cuba and comparisons between the cost of Cuban refined sugar and the cost of refined sugar produced in the United States are presented in part II of this report. Here it will be convenient, for comparison with the data presented in table 74, to show the costs of Cuban raw sugar, excluding and including interest on investment, together with the cost of converting it into refined sugar in continental United States itself. These data are represented in table 75.

Table 75.- Cuban cane sugar: Costs of production of raw sugar and costs of refining such sugar in the United States, with and without interest

Note: See headnote to table 73.

(Cents per pound)

	1929-30	1930-31	1931-32	Simple average 3 years
Cuban raw sugar -				
Costs excluding interest -				
F.o.b. sugar mill in Cuba	1.50	1.37	1.13	1.33
Delivered at Cuban ports	1.62	1.49	1.23	1.45
Delivered at United States ports	1.76	1.62	1.36	1.58
Imputed interest on investment in production of cane and in mills	.30	.36	.37	.34
Total costs including imputed interest:				
F.o.b. sugar mill in Cuba	1.80	1.73	1.50	1.67
Delivered at Cuban ports	1.92	1.85	1.60	1.79
Delivered at United States ports	2.06	1.98	1.73	1.92
Average cost of refining all cane sugar in continental United States 1/				
Excluding interest	.71	.68	.64	.68
Including imputed interest	.85	.82	.78	.82
Cost of Cuban cane sugar plus cost of refining in United States, f.o.b. refineries on Atlantic and Gulf coasts of the United States -				
Excluding interest	2.47	2.30	2.00	2.26
Including interest	2.91	2.80	2.51	2.74

1/ These costs are for all refineries, including those on the Pacific coast (the same as used in table 74). The costs of the Atlantic and Gulf coast refineries, which handle the Cuban raw sugar, are substantially the same.

Average Cost of Total Cane and Beet Sugar Produced in the United States and its Outlying Areas

The data presented in the preceding tables regarding the costs on a refined basis of cane sugar produced in the United States and its insular areas may be combined with the data concerning the cost of beet sugar, in order to show the general average cost of all the sugar produced in this country and its outlying areas delivered to the markets to which it ordinarily goes. These data are shown in table 76, both including and excluding interest charges.

Table 76.- Refined cane and beet sugar: Costs of production in the United States and its insular areas, including and excluding imputed interest on investment and internal United States transportation

(Cents per pound)

	1929-30	1930-31	1931-32	Simple average 3 years
Costs exclusive of interest on investment -				
Cane sugar, on refined basis f.o.b. refineries in continental United States	3.61	3.55	3.16	3.44
Beet sugar (refined product) f.o.b. sugar factories	3.48	3.42	3.08	3.33
Weighted average	3.57	3.51	3.13	3.40
Interest imputed at 6 percent on investments in production of cane or beets and in sugar factories and refineries -				
Cane sugar	.61	.60	.53	.58
Beet sugar	.63	.58	.59	.60
Weighted average	.62	.59	.55	.59
Costs including imputed interest -				
Cane sugar f.o.b. refineries	4.22	4.15	3.69	4.02
Beet sugar f.o.b. factories	4.11	4.00	3.67	3.93
Weighted average	4.19	4.10	3.68	3.99
Transportation to principal markets in the United States -				
Cane sugar - from Atlantic and Gulf coast refineries to the principal markets supplied by those refineries 1/	.27	.27	.27	.27
Beet sugar - from sugar factories to all markets where sold 2/	.48	.48	.53	.50
Weighted average	.33	.33	.36	.34
Costs including imputed interest and transportation to the principal United States markets supplied by each kind of sugar -				
Cane sugar	4.49	4.42	3.96	4.29
Beet sugar	4.59	4.48	4.20	4.43
Weighted average	4.52	4.43	4.04	4.33
Weights used in computing averages -				
Cane sugar, quantity of refined originating in United States and its insular areas consumed in continental United States - 1,000 tons	2,156	2,424	2,558	-
Beet sugar, total production - 1,000 tons	959	1,066	1,255	-

1/ Weighted average of transportation rates to representative markets supplied from Atlantic and Gulf coast refineries. Transportation charges on refined sugar made from Hawaiian raws in Pacific coast refineries were not included in arriving at these averages.

2/ Average of transportation charges paid on shipments from beet sugar factories.

UNITED STATES TARIFF COMMISSION
Washington

S U G A R

REPORT

of the

UNITED STATES TARIFF COMMISSION

to the

PRESIDENT OF THE UNITED STATES

SECTION III. APPENDIXES

Under the Provisions
of Section 332 and 336
of the
Tariff Act of 1930

APPENDIX I

STATISTICS ON SUGAR

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Introduction

An effort has been made to present in the following tables the essential statistics with reference to sugar. Various sources have been drawn upon and many of the tables represent new analyses and bring out facts and relationships not shown heretofore. These tables were prepared as a statistical background to accompany the report of the Commission in its sugar investigation for the purposes of section 336 of the Tariff Act of 1930. In this report quantities are expressed in short tons of 2,000 pounds, unless otherwise stated.

First in the order of arrangement come the tables on production: World production of both cane and beet sugar is set forth; production in principal areas supplying the United States market, with details of production in the insular areas and Cuba. Attention is called to the fact that the headings of the tables on production do not indicate whether the figures relate to raw or refined sugar, but in general it may be stated that statistics with respect to cane sugar production relate almost entirely to raw sugar. The data for beet sugar production in the United States are in terms of refined sugar, for other countries they include some raw beet sugar. In some of the tables calendar years are used as the basis of comparison, and in other tables, crop years. Table 8 gives the harvesting period in the different countries, and indicates approximately the end of the crop year for each region. The use of five-year averages, where shown, tends to minimize the difference between calendar and crop years. Figures of estimated production more especially in later periods shown, are constantly being revised in the light of fuller information. For this reason minor discrepencies may occur among various tables in this report.

The next section is on consumption, showing crop sources of sugar marketed for consumption in the United States, and the geographical distribution in the United States of refined sugar from specified refining sources, and other analyses of the domestic consumption of sugar. Statistics of imports and exports are given, together with figures on drawbacks paid. A map is given showing the location of beet-sugar factories and cane-sugar refineries in the United States and charts showing graphically the crop sources of sugar marketed for consumption in the United States.

The section on prices shows by months for a period of years promedio prices of 96° sugar in Cuba, prices of refined granulated sugar f.o.b. New York, and a comparison in New York of prices for fine granulated sugar f.o.b. and 96° centrifugal sugar duty paid and the margin between the two.

There are also shown a series of tables giving the trade of the United States by commodity groups with Cuba, the Philippines, Hawaii, and Puerto Rico.

PRODUCTION

Table 1. - Sugar: World production of sugar from sugar cane and from sugar beets, respectively, shown by crop years from 1911-12 to 1932-33, inclusive

Crop year	Quantity - in millions of short tons			Ratio of cane and of beet to total production	
	Cane sugar	Beet sugar	Total	Cane sugar	Beet sugar
				Percent	Percent
1932-33 (estimated)	18.47	8.72	27.19	67.9	32.1
1931-32	19.96	9.53	29.49	67.7	32.3
1930-31	19.21	12.68	31.89	60.2	39.8
1929-30	20.35	10.25	30.60	66.5	33.5
1928-29	20.27	10.56	30.83	65.7	34.3
1927-28	19.10	10.11	29.21	65.4	34.6
1926-27	18.38	8.63	27.01	68.1	31.9
5-year average	19.46	10.45	29.91	65.1	34.9
1925-26	17.96	9.29	27.25	65.9	34.1
1924-25	17.80	9.07	26.87	66.2	33.8
1923-24	15.95	6.56	22.51	70.9	29.1
1922-23	14.74	5.83	20.57	71.7	28.3
1921-22	14.24	5.53	19.77	72.0	28.0
5-year average	16.14	7.25	23.39	69.0	31.0
1920-21	13.39	5.27	18.66	71.7	28.3
1919-20	13.70	3.66	17.36	78.7	21.3
1918-19	13.35	4.35	17.70	75.4	24.6
1917-18	13.85	5.61	19.46	71.2	28.8
1916-17	12.69	6.47	19.16	66.2	33.8
5-year average	13.39	5.07	18.47	72.5	27.5
1915-16	11.89	7.00	18.89	62.9	37.1
1914-15	11.40	9.30	20.70	55.1	44.9
1913-14	10.98	9.67	20.65	53.2	46.8
1912-13	10.40	9.99	20.39	51.0	49.0
1911-12	10.28	7.71	17.99	57.1	42.9
5-year average	10.99	8.74	19.73	55.7	44.3

Source: Basic figures from Willett and Gray.

Table

Crop year	ction sugar of ns)	Ratio of production in United States supply areas to total world production
		Percent
1932-33 (Est.)		30.4
1931-32		31.2
1930-31		33.2
1929-30		39.8
1928-29		40.8
1927-28		36.3
1926-27		39.2
5-year average		37.9
1925-26		41.8
1924-25		44.6
1923-24		39.4
1922-23		37.6
1921-22		43.2
5-year average		41.4
1920-21		44.3
1919-20		40.9
1918-19		44.7
1917-18		39.0
1916-17		40.1
5-year average		41.8
1915-16		41.7
1914-15		38.3
1913-14		40.5
1912-13		38.5
1911-12		36.0
5-year average		39.1

Basic figures from Willett and Gray

Table 2. - Raw cane sugar: Production in principal areas supplying the United States market, by crop years, 1911-12 to 1932-33, inclusive

Crop year	Production of raw cane sugar in principal areas supplying the United States: Quantity - Millions of short tons: United States: Mainland	United States: Insular areas	Cuba	Total	Percent of total: United States: Mainland	United States: Insular areas	Cuba	World production of raw cane sugar (millions of short tons)	Ratio of production in United States supply areas to total world production
									Percent
1932-33 (Est.)	0.26	3.13	2.23	5.63	4.6	55.8	39.6	18.47	30.4
1931-32	.18	3.12	2.92	6.22	2.9	50.2	46.9	19.96	31.2
1930-31	.21	2.66	3.50	6.37	3.3	41.8	54.9	19.21	33.2
1929-30	.20	2.66	5.23	8.09	2.5	32.9	64.6	20.35	39.8
1928-29	.13	2.37	5.78	8.28	1.6	28.6	69.8	20.27	40.8
1927-28	.07	2.37	4.49	6.93	1.0	34.2	64.8	19.10	36.3
1926-27	.05	2.10	5.05	7.20	.7	29.2	70.1	18.38	39.2
5-year average	.13	2.43	4.81	7.37	1.7	33.0	65.3	19.46	37.9
1925-26	.14	1.89	5.47	7.50	1.9	25.2	72.9	17.96	41.8
1924-25	.09	2.10	5.74	7.93	1.1	26.5	72.4	17.80	44.6
1923-24	.16	1.57	4.55	6.28	2.5	25.0	72.5	15.95	39.4
1922-23	.30	1.21	4.04	5.55	5.4	21.8	72.8	14.74	37.6
1921-22	.33	1.35	4.48	6.16	5.4	21.9	72.7	14.24	43.2
5-year average	.20	1.62	4.86	6.68	3.0	24.7	72.8	16.14	41.4
1920-21	.17	1.35	4.41	5.93	2.8	22.8	74.4	13.39	44.3
1919-20	.12	1.30	4.18	5.60	2.1	23.2	74.7	13.70	40.9
1918-19	.28	1.24	4.45	5.97	4.8	20.7	74.5	13.35	44.7
1917-18	.24	1.29	3.86	5.39	4.5	23.9	71.6	13.85	39.0
1916-17	.31	1.39	3.39	5.09	6.1	27.3	66.6	12.69	40.1
5-year average	.23	1.31	4.06	5.60	4.1	23.4	72.5	13.39	41.8
1915-16	.14	1.45	3.37	4.96	2.8	29.2	68.0	11.89	41.7
1914-15	.25	1.22	2.90	4.37	5.7	28.0	66.3	11.40	38.3
1913-14	.30	1.24	2.91	4.45	6.7	28.0	65.3	10.98	40.5
1912-13	.16	1.12	2.72	4.00	4.0	28.0	68.0	10.40	38.5
1911-12	.36	1.22	2.12	3.70	9.7	33.0	57.3	10.28	36.0
5-year average	.24	1.25	2.81	4.30	5.8	29.2	65.0	10.99	39.1

Basic figures from Willett and Gray.

Table 3. - Raw cane sugar: Production in specified United States insular areas by crop years from 1911-12 to 1932-33, inclusive

Crop year	Quantity - in thousands of short tons					Percentage of total insular			
	Hawaii	Virgin Is.	Puerto Rico	Philippine Islands	Total production of insular areas	Hawaii	Virgin Is.	Puerto Rico	Philippine Islands
1932-33 (est.)	1,008	6	834	1,283	3,131	32.2	0.2	26.6	41.0
1931-32	1,025	5	992	1,101	3,123	32.8	.2	31.8	35.2
1930-31	996	2	788	876	2,662	37.4	.1	29.6	32.9
1929-30	925	6	866	867	2,664	34.7	.2	32.5	32.6
1928-29	946	4	594	830	2,374	39.8	.2	25.0	35.0
1927-28	904	12	751	698	2,365	38.2	.5	31.8	29.5
1926-27	811	8	630	655	2,104	38.6	.4	29.9	31.1
5-year average	917	6	726	785	2,434	37.7	.2	29.8	32.3
1925-26	790	6	607	489	1,892	41.8	.3	32.1	25.8
1924-25	776	8	660	651	2,095	37.0	.4	31.5	31.1
1923-24	701	3	448	417	1,569	44.7	.2	28.5	26.6
1922-23	537	2	379	295	1,213	44.3	.2	31.2	24.3
1921-22	562	6	406	379	1,353	41.6	.4	30.0	28.0
5-year average	673	5	500	446	1,624	41.4	.3	30.8	27.5
1920-21	565	5	491	286	1,347	41.9	.4	36.5	21.2
1919-20	570	14	486	234	1,304	43.7	1.1	37.3	17.9
1918-19	602	10	406	219	1,237	48.7	.8	32.8	17.7
1917-18	574	6	464	242	1,286	44.6	.5	36.1	18.8
1916-17	650	9	502	227	1,388	46.8	.6	36.2	16.4
5-year average	592	9	470	241	1,312	45.1	.7	35.8	18.4
1915-16	593	17	483	372	1/ 1,465	40.5	1.1	33.0	25.4
1914-15	646	5	345	233	1/ 1,229	52.5	.4	28.1	19.0
1913-14	617	6	364	261	1/ 1,248	49.4	.5	29.2	20.9
1912-13	547	7	398	174	1/ 1,126	48.6	.6	35.3	15.5
1911-12	595	8	411	214	1/ 1,228	48.4	.7	33.5	17.4
5-year average	600	9	400	250	1/ 1,259	47.9	.7	31.8	19.6

Source: Basic figures from Willett and Gray.

1/ Includes production of Virgin Islands, which did not become insular area of United States until crop year of 1916-17.

Table 4. - Beet sugar: Production in the United States, compared with total world production, crop years 1911-12 to 1932-33, inclusive

Crop year	Quantity - in millions of short tons				Percentage of world total		
	United States	Canada	Europe	World total	United States	Canada	Europe
1932-33(estimated)	1.35	0.06	7.30	8.72	15.5	0.8	83.7
1931-32	1.15	.05	8.33	9.53	12.1	.5	87.4
1930-31	1.20	.05	11.44	12.69	9.5	.4	90.1
1929-30	1.01	.03	9.21	10.25	9.8	.3	89.9
1928-29	1.05	.03	9.48	10.56	9.9	.3	89.8
1927-28	1.08	.03	9.00	10.11	10.7	.3	89.0
1926-27	.90	.03	7.70	8.63	10.4	.5	89.1
5-year average	1.05	.03	9.37	10.45	10.0	.3	89.7
1925-26	.90	.04	8.35	9.29	9.7	.4	89.9
1924-25	1.09	.04	7.93	9.06	12.0	.5	87.5
1923-24	.88	.02	5.66	6.56	13.4	.3	86.3
1922-23	.69	.01	5.12	5.82	11.8	.2	88.0
1921-22	1.02	.02	4.49	5.53	18.4	.4	81.2
5-year average	.92	.03	6.31	7.26	12.7	.4	86.9
1920-21	1.08	.04	4.15	5.27	20.5	.8	78.7
1919-20	.73	.02	2.92	3.67	19.9	.5	79.6
1918-19	.76	.02	3.57	4.35	17.5	.4	82.1
1917-18	.77	.01	4.84	5.62	13.7	.2	86.1
1916-17	.82	.01	5.63	6.46	12.7	.2	87.1
5-year average	.83	.02	4.22	5.07	16.4	.4	83.2
1915-16	.87	.02	6.11	7.00	12.4	.3	87.3
1914-15	.72	.02	8.56	9.30	7.7	.2	92.1
1913-14	.73	.01	8.93	9.67	7.5	.1	92.4
1912-13	.70	.01	9.28	9.99	7.0	.1	92.9
1911-12	.61	.01	7.10	7.72	7.9	.1	92.0
5-year average	.73	.01	8.00	8.74	8.4	.1	91.5

Basic figures from Willett and Gray.

Ohio:								
1928	38,000	266	7.0	7.13	5	238	31	
1929	20,000	174	8.7	7.55	4	121	17	
1930	31,000	286	9.2	7.75	4	223	33	
1931 3/	---	---	---	---	-	---	--	
1932	26,000	259	10.0	----	3	251	42	
Utah:								
1928	51,000	637	12.5	7.03	11	568	90	
1929	45,000	565	12.6	7.05	10	523	77	
1930	44,000	553	12.6	7.00	8	517	78	
1931	49,000	505	10.3	5.82	7	491	77	
1932	56,000	846	15.1	---	7	822	128	
Wisconsin:								
1928	8,000	74	9.2	7.35	3	86	12	
1929	8,000	56	7.0	7.29	3	65	10	
1930	12,000	102	8.5	7.53	3	115	15	
1931 3/	---	---	---	----	-	---	--	
1932	---	---	---	----	-	---	--	
Wyoming:								
1928	44,000	462	10.5	7.21	4	368	59	
1929	47,000	487	10.4	7.18	4	441	66	
1930	46,000	646	14.0	7.19	5	657	94	
1931	49,000	552	11.3	5.71	5	532	85	
1932	40,000	506	12.6	----	5	537	85	

Source: Statistical Abstract of the United States, 1932.
1/ Beets used 1901 to 1912.
2/ Four-year average.
3/ Data for 1931 cannot be shown without disclosing operations of individual factories.

Table 40.- Sugar beets and beet sugar: Total United States production 1901-1932, and production by States, 1928-1932

Period and State	Beets produced for sugar: Acreage harvested	Crop (1,000 tons)	Tons per acre	Price per ton (dollars)	Number of factories	Sugar made: Beets used (1,000 tons)	Sugar made (1,000 tons)
United States:			(5-year average)				
1901-1905	237,841	1/ 2,[illegible]	[illegible]	[illegible]	45	2,[illegible]	240
1906-1910	306,[illegible]52	1/ 3,[illegible]10	10.13	[illegible]5.1[illegible]	57	3,9[illegible]	479
1911-1915	541,000	1/ 5,[illegible]73	10.66	[illegible].6[illegible]	67	5,477	7[illegible]4
1916-1920	600,000	[illegible]	9.50	[illegible].38	80	[illegible]	[illegible]
1921-1925	[illegible]92,000	6,9[illegible]	10.14	7.53	89	[illegible]	[illegible]19
1926-1930	701,000	7,718	11.00	7.32	8[illegible]	7,[illegible]0	1,[illegible]56
			(Annual statistics)				
1922	530,000	5,133	9.77	7.91	81	[illegible]	[illegible]6[illegible]
1923	697,000	7,006	10.66	8.99	8[illegible]	[illegible]	[illegible]21
1924	815,000	7,[illegible]89	9.20	7.39	9[illegible]	7,075	1,[illegible]40
1925	647,000	7,[illegible]22	11.40	6.39	8[illegible]	[illegible]	913
1926	677,000	7,[illegible]23	10.67	7.61	7[illegible]	[illegible]	897
1927	701,000	7,759	10.75	7.67	8[illegible]	7,[illegible]	1,093
1928	644,000	7,101	11.00	7.11	8[illegible]	[illegible]	1,061
1929	688,000	7,31[illegible]	10.6	7.08	79	7,117	1,018
1930	775,000	9,199	11.9	7.14	73	[illegible]	1,[illegible]08
1931	713,000	7,[illegible]03	11.1	5.[illegible]7	66	7,659	1,156
1932	764,000	9,070	11.9	5.10	75	8,[illegible]6[illegible]	1,357
California:							
1928	49,000	6[illegible]2	13.0	8.0[illegible]	[illegible]5	6[illegible]6	103
1929	4[illegible],000	54[illegible]	11.8	7.[illegible]	[illegible]5	5[illegible]4	91
1930	65,000	7[illegible]	11.3	7.46	[illegible]5	7[illegible]	124
1931	8[illegible],000	1,[illegible]00	11.9	7.40	[illegible]7	1,045	1[illegible]6
1932	104,000	1,[illegible]8[illegible]	12.4	----	[illegible]6	1,[illegible]32	213
Colorado:							
1928	17[illegible],000	[illegible],394	13.4	6.07	17	2,410	384
1929	21[illegible],000	[illegible],[illegible]1[illegible]	12.4	6.93	17	[illegible],[illegible]15	348
1930	242,000	3,312	13.7	[illegible].71	17	3,126	4[illegible]7
1931	224,000	2,532	11.3	5.44	17	2,423	370
1932	15[illegible],000	1,777	11.4	--	17	1,731	[illegible]77
Idaho:							
1928	27,000	[illegible]97	11.0	7.4[illegible]	6	317	53
1929	48,000	492	10.2	7.17	8	492	79
1930	44,000	446	10.1	7.4[illegible]	7	427	[illegible]6
1931	33,000	3[illegible]	[illegible].1	[illegible].[illegible]	[illegible]	287	46
1932	53,000	7[illegible]	13.4	----	7	[illegible].[illegible]1	108
Michigan:							
1928	71,000	4[illegible]	[illegible].4	7.22	12	4[illegible]	64
1929	52,000	3[illegible]	[illegible].8	7.94	[illegible]	3[illegible]4	57
1930	74,[illegible]	[illegible]13	[illegible].9	8.[illegible]	10	5[illegible]7	86
1931	58,000	5[illegible]	10.0	6.33	6	[illegible]00	83
1932	1[illegible]2,000	1,215	10.0	----	[illegible]1	1,21[illegible]	171
Montana:							
1928	28,000	2[illegible]0	9.2	7.36	4	275	44
1929	38,000	3[illegible]6	10.2	7.29	4	348	54
1930	45,000	5[illegible]2	12.7	7.3[illegible]	[illegible]	5[illegible]	[illegible]7
1931	54,000	617	11.4	6.01	[illegible]	[illegible]00	9[illegible]
1932	54,000	739	13.7	----	4	701	10[illegible]
Nebraska:							
1928	86,000	1,021	11.9	6.9[illegible]	[illegible]	975	145
1929	92,000	1,054	11.5	6.96	[illegible]	1,008	140
1930	81,000	1,136	14.[illegible]	6.9[illegible]	[illegible]	1,095	136
1931	65,000	891	13.7	5.46	[illegible]	872	126
1932	66,000	377	13.3	----	[illegible]	815	113
Ohio:							
1928	38,[illegible]00	[illegible]66	[illegible].0	7.1[illegible]	[illegible]5	[illegible]38	31
1929	[illegible]0,000	174	[illegible].7	7.5	[illegible]4	[illegible]21	17
1930	31,000	[illegible]8	[illegible].2	7.[illegible]	[illegible]4	[illegible]29	33
1931 3/	---	---	--	--	[illegible]	---	--
1932	[illegible]6,000	[illegible]59	10.[illegible]	---	[illegible]	[illegible]51	42
Utah:							
1928	51,000	[illegible]7	12.6	7.0[illegible]	11	[illegible]0	90
1929	45,000	565	12.6	7.05	10	[illegible]3	77
1930	44,000	553	12.6	7.00	[illegible]	[illegible]1	78
1931	49,000	505	10.3	5.8[illegible]	7	[illegible]4	77
1932	56,000	846	15.1	---	7	[illegible]8	1[illegible]8
Wisconsin:							
1928	8,000	7[illegible]	9.2	7.35	3	[illegible]6	1[illegible]
1929	[illegible],000	56	7.0	7.29	3	65	1[illegible]
1930	12,000	102	[illegible].5	7.53	[illegible]	11[illegible]	1[illegible]
1931 3/	---	---	---	---	-	---	--
1932	---	---	---	---	-	---	--
Wyoming:							
1928	44,000	4[illegible]2	10.5	[illegible].21	4	368	57
1929	47,000	487	10.4	7.18	4	441	[illegible]6
1930	46,000	[illegible]46	12.[illegible]	7.19	[illegible]	657	9[illegible]
1931	49,000	55[illegible]	11.3	5.[illegible]7	[illegible]	53[illegible]	85
1932	4[illegible],000	50[illegible]	12.6	----	[illegible]	537	85

Source: Statistical Abstract of the United States, 1932.

1/ Beets used 1901 to 1/12.

2/ Four-year average.

3/ Data for 1931 cannot be shown without disclosing operations of individual factories.

Table with receipts
lusive

Year 1/	United Sta land produ Refined beet sugar	mainland, insular areas: ombined (cane only) ipts in 3/ ed States arkets	Ratio of receipts to production: Percent	Total receipts of cane sugar all sources 4/
1932	1,148	4,946	79.5	4,965
1931	1,205	5,164	81.1	5,192
1930	1,010	5,715	70.6	5,763
1929	1,051	5,886	71.1	5,903
1928	1,081	5,509	79.5	5,531
1927	897	5,625	78.2	5,635
5-year average	1,049	5,580	75.7	5,605
1926	901	5,953	79.4	5,973
1925	1,091	5,849	73.8	5,877
1924	882	5,295	84.2	5,403
1923	690	4,801	86.6	4,988
1922	1,021	6,063	98.5	6,106
5-year average	917	5,593	83.7	5,669
1921	1,086	3,889	65.6	4,146
1920	731	4,115	73.4	4,937
1919	756	4,662	78.1	4,722

Source: Production figures are ic Commerce.

1/ Production given is for cro

2/ Production in the United St

3/ Does not include sugar whic

4/ Includes sugar which pays f

Table 5. - Sugar: Production of United States mainland, United States insular areas, and Cuba, compared with receipts in United States mainland markets from these respective areas, 1919 to 1932, inclusive

(Quantity - in thousands of short tons)

Year 1/	United States mainland production 2/		United States insular areas			Cuba			United States mainland, insular areas and Cuba combined (cane only)			Total receipts of cane sugar all sources 4/
	Refined beet sugar	Raw cane sugar	Production	Receipts in United States markets	Ratio of receipts to production	Production	Receipts in United States markets	Ratio of receipts to production	Production	Receipts in 3/ United States markets	Ratio of receipts to production	
					Percent			Percent			Percent	
1932	1,148	180	3,123	2,960	94.8	2,915	1,807	62.0	6,218	4,946	79.5	4,965
1931	1,205	210	2,662	2,545	95.6	3,497	2,409	68.9	6,369	5,164	81.1	5,192
1930	1,010	200	2,664	2,475	92.9	5,232	3,040	58.1	8,096	5,715	70.6	5,763
1929	1,051	132	2,374	2,104	88.6	5,775	3,650	63.2	8,281	5,886	71.1	5,903
1928	1,081	71	2,365	2,139	90.4	4,493	3,299	73.4	6,929	5,509	79.5	5,531
1927	897	47	2,104	1,887	89.7	5,045	3,691	73.2	7,196	5,625	78.2	5,635
5-year average	1,049	132	2,434	2,230	91.6	4,808	3,218	66.9	7,374	5,580	75.7	5,605
1926	901	139	1,892	1,693	89.5	5,471	4,121	75.3	7,502	5,953	79.4	5,973
1925	1,091	88	2,095	1,859	88.7	5,741	3,902	68.0	7,925	5,849	73.8	5,877
1924	882	165	1,569	1,411	89.9	4,555	3,719	81.6	6,289	5,295	84.2	5,403
1923	690	298	1,213	1,101	90.8	4,035	3,402	84.3	5,546	4,801	86.6	4,988
1922	1,021	328	1,353	1,209	89.4	4,476	4,526	101.1	6,157	6,063	98.5	6,106
5-year average	917	204	1,624	1,455	89.6	4,856	3,934	81.0	6,684	5,593	83.7	5,669
1921	1,086	176	1,347	1,182	87.8	4,409	2,531	57.4	5,932	3,889	65.6	4,146
1920	731	123	1,304	1,122	86.0	4,178	2,870	68.7	5,605	4,115	73.4	4,937
1919	756	284	1,237	1,042	84.2	4,448	3,336	75.0	5,969	4,662	78.1	4,722

Source: Production figures are based on Willett and Gray; figures for receipts are from reports of Bureau of Foreign and Domestic Commerce.

1/ Production given is for crop years ending in the year shown; receipts are by calendar years.

2/ Production in the United States mainland is considered equivalent to receipts.

3/ Does not include sugar which pays full duty.

4/ Includes sugar which pays full duty.

Year
1932 ---
1931 ---
1930 ---
1929 ---
1928 ---
1927 ---
5-year a
1926 ---
1925 ---
1924 ---
1923 ---
1922 ---
5-year a
1921 ---
1920 ---
1919 ---

1/ Produc
2/ Totals

Table 5a.- Sugar: Production in Hawaii, Puerto Rico, and the Philippine Islands, compared with receipts in the United States mainland markets from these areas, 1919 to 1932, inclusive

(Quantity - in thousands of short tons)

Year 1/	Hawaii			Puerto Rico			Philippine Islands			Total - United States insular areas 2/		
	Production	Receipts in United States markets	Ratio of receipts to production	Production	Receipts in United States markets	Ratio of receipts to production	Production	Receipts in United States markets	Ratio of receipts to production	Production	Receipts in United States markets	Ratio of receipts to production
			Percent			Percent			Percent			Percent
1932	1,025	1,021	99.6	992	894	90.1	1,107	1,040	94.4	3,123	2,960	94.8
1931	996	968	97.2	788	758	96.2	876	818	93.4	2,662	2,545	95.6
1930	925	866	93.6	866	809	93.4	867	794	91.6	2,664	2,475	92.9
1929	946	882	93.2	594	507	85.4	830	711	85.7	2,374	2,104	88.6
1928	904	878	97.1	751	674	89.7	697	575	82.5	2,365	2,139	90.4
1927	811	777	95.8	630	574	91.1	654	531	81.2	2,104	1,887	89.7
5-year average	916	874	95.4	726	665	91.6	785	686	87.4	2,434	2,230	91.6
1926	790	747	94.6	606	559	92.2	489	380	77.7	1,892	1,693	89.5
1925	776	755	97.3	661	600	90.8	651	493	75.7	2,095	1,859	88.7
1924	701	677	96.6	448	393	87.7	417	339	81.3	1,569	1,411	89.9
1923	537	519	96.6	379	342	90.2	295	238	80.7	1,213	1,101	90.8
1922	562	568	101.1	406	360	88.7	379	275	72.6	1,353	1,209	89.4
5-year average	673	653	97.0	500	451	90.2	446	345	77.4	1,624	1,455	89.6
1921	565	541	95.8	491	469	95.5	287	165	57.5	1,347	1,182	87.8
1920	569	550	96.7	486	413	85.0	234	146	62.4	1,304	1,122	86.0
1919	602	579	96.2	406	364	89.7	219	88	40.2	1,237	1,042	84.2

1/ Production given is for crop years ending in the year shown; receipts are by calendar years.
2/ Totals for Virgin Islands (included in these figures) expressed in thousands of short tons, are as follows:

	1932	Average 1927-1931 inclusive	Average 1922-1926 inclusive	1921	1920	1919
Production	4.5	6.5	4.9	5.0	13.9	10.1
Receipts in U.S. markets	4.3	5.6	5.3	6.3	13.2	10.2

ve

mbined (Beet sugar converted to raw cane sugar equivalent)		
United States (continental and insular)	Cuba	All other areas in Western Hemisphere
3,552,724	2,234,488	3,484,541
3,431,219	2,915,208	3,504,569
3,285,297	3,496,848	3,459,977
3,083,352	5,231,811	3,353,194
2,800,698	5,775,073	3,146,562
2,894,739	4,493,123	3,133,129
3,099,061	4,382,413	3,319,486
2,456,837	5,045,282	3,125,120
2,506,220	5,470,817	2,786,031
2,700,481	5,741,086	2,714,849
2,257,441	4,554,639	2,460,533
1,951,250	4,035,259	2,323,724
2,374,446	4,969,416	2,682,052
2,390,392	4,475,953	1,938,746
2,391,583	4,408,365	1,705,374
1,972,760	4,177,686	1,971,986
2,107,611	4,448,389	1,416,444
2,105,486	3,859,613	1,361,145
2,193,567	4,274,002	1,678,737
2,346,904	3,386,566	1,363,474
2,166,178	3,368,865	1,406,105
2,017,636	2,903,787	1,590,446
2,073,402	2,909,460	1,417,667
1,862,755	2,719,961	1,132,808
2,093,374	3,057,728	1,382,100
2,023,712	2,123,502	1,326,383
1,814,603	1,661,465	1,298,885
1,795,079	2,020,871	1,229,676
1,708,654	1,695,212	1,212,980
1,681,459	1,077,393	1,042,423
1,804,701	1,715,689	1,222,070
1,480,855	1,598,994	1,153,910
1,405,378	1,320,199	1,257,152
1,244,296	1,302,849	1,066,182
1,040,040	1,165,056	1,109,289
1,150,725	1,118,743	1,075,608
1,264,258	1,301,168	1,132,428

ncluded.
lable for these years.

Table 6... - Sugar: Production in Western Hemisphere by crop-years from 1902-03 to 1932-33, inclusive

(In short tons)

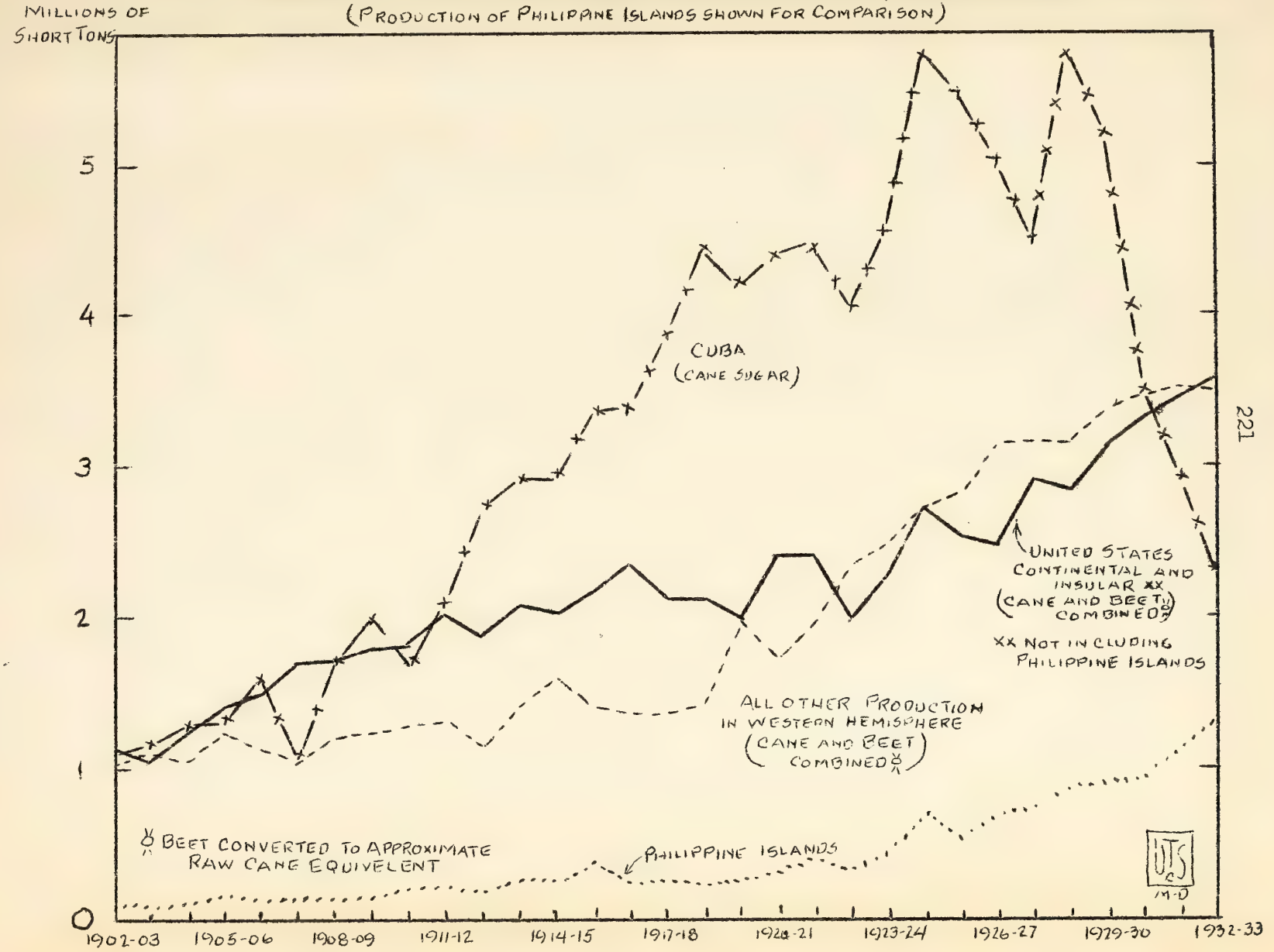
Crop-year	Raw cane sugar: Total-Western Hemisphere	Raw cane sugar: United States (continental and insular) 1/	Raw cane sugar: Cuba	Raw cane sugar: All other areas in Western Hemisphere 2/	Beet sugar (converted to raw cane sugar equivalent): Total-Western Hemisphere	Beet sugar (converted to raw cane sugar equivalent): United States	Beet sugar (converted to raw cane sugar equivalent): Canada	Cane and beet sugar combined (Beet sugar converted to raw cane sugar equivalent): Total-Western Hemisphere	Cane and beet sugar combined (Beet sugar converted to raw cane sugar equivalent): United States (continental and insular)	Cane and beet sugar combined (Beet sugar converted to raw cane sugar equivalent): Cuba	Cane and beet sugar combined (Beet sugar converted to raw cane sugar equivalent): All other areas in Western Hemisphere
1932-33 3/	7,757,053	2,106,667	2,234,488	3,415,898	1,514,100	1,446,057	68,643	9,271,153	3,552,724	2,234,488	3,484,541
1931-32	8,564,548	2,202,599	2,915,208	3,446,741	1,286,448	1,228,620	57,828	9,850,996	3,431,219	2,915,208	3,504,569
1930-31	8,903,940	1,996,193	3,496,848	3,410,899	1,338,182	1,289,104	49,078	10,242,122	3,285,297	3,496,848	3,459,977
1929-30	10,554,346	2,002,739	5,231,811	3,319,796	1,114,011	1,080,613	33,398	11,668,357	3,083,352	5,231,811	3,353,194
1928-29	10,562,885	1,675,832	5,775,073	3,111,980	1,159,448	1,124,866	34,582	11,722,333	2,800,698	5,775,073	3,146,562
1927-28	9,331,636	1,737,994	4,493,123	3,100,519	1,189,355	1,156,745	32,610	10,520,991	2,894,739	4,493,123	3,133,129
5-year average	9,583,471	1,923,071	4,382,413	3,277,987	1,217,489	1,175,990	41,499	10,800,960	3,099,061	4,382,413	3,319,486
1926-27	9,629,369	1,496,624	5,045,282	3,087,463	997,870	960,213	37,657	10,627,239	2,456,837	5,045,282	3,125,120
1925-26	9,760,110	1,542,180	5,470,817	2,747,113	1,002,958	964,040	38,918	10,763,068	2,506,220	5,470,817	2,786,031
1924-25	9,945,571	1,533,018	5,741,086	2,671,467	1,210,845	1,167,463	43,382	11,156,416	2,700,481	5,741,086	2,714,849
1923-24	8,309,438	1,314,040	4,554,639	2,440,759	963,175	943,401	19,774	9,272,613	2,257,441	4,554,639	2,460,533
1922-23	7,557,235	1,213,112	4,035,259	2,308,864	752,998	738,138	14,860	8,310,233	1,951,250	4,035,259	2,323,724
5-year average	9,040,345	1,419,795	4,969,416	2,651,134	985,569	954,651	30,918	10,025,914	2,374,446	4,969,416	2,602,052
1921-22	7,690,434	1,298,422	4,475,953	1,916,059	1,114,657	1,091,970	22,687	8,805,091	2,390,392	4,475,953	1,938,746
1920-21	7,302,105	1,209,831	4,408,365	1,663,909	1,203,217	1,161,752	41,465	8,505,322	2,391,583	4,408,365	1,705,374
1919-20	7,320,154	1,190,256	4,177,686	1,952,212	802,276	782,504	19,774	8,122,432	1,972,760	4,177,686	1,971,986
1918-19	7,136,929	1,298,820	4,448,389	1,389,720	835,515	808,791	26,724	7,972,444	2,107,611	4,448,389	1,416,444
1917-18	6,494,414	1,237,138	3,859,613	1,347,663	831,830	818,348	13,482	7,326,244	2,055,486	3,859,613	1,361,145
5-year average	7,188,807	1,260,894	4,274,002	1,653,911	957,499	932,673	24,826	8,146,306	2,193,567	4,274,002	1,678,737
1916-17	6,201,647	1,466,587	3,386,566	1,348,494	895,297	880,317	14,980	7,096,944	2,346,904	3,386,566	1,363,474
1915-16	5,985,547	1,231,718	3,368,865	1,384,964	955,601	934,460	21,141	6,941,148	2,166,178	3,368,865	1,406,105
1914-15	5,720,643	1,243,162	2,903,787	1,573,694	791,226	774,474	16,752	6,511,869	2,017,636	2,903,787	1,590,446
1913-14	5,601,229	1,288,093	2,909,460	1,403,676	799,300	785,309	13,991	6,400,529	2,073,402	2,909,460	1,417,667
1912-13	4,953,324	1,114,877	2,719,961	1,118,486	762,200	747,878	14,322	5,715,524	1,862,755	2,719,961	1,132,808
5-year average	5,692,478	1,268,887	3,057,728	1,365,863	840,724	824,487	16,237	6,533,202	2,093,374	3,057,728	1,382,100
1911-12	4,813,730	1,375,257	2,123,502	1,314,971	659,867	648,455	11,412	5,473,597	2,023,712	2,123,502	1,326,383
1910-11	4,229,418	1,269,068	1,661,465	1,298,885	545,535	545,535	4/	4,774,953	1,814,603	1,661,465	1,298,885
1909-10	4,505,633	1,255,086	2,020,871	1,229,676	539,993	539,993	4/	5,045,626	1,795,079	2,020,871	1,229,676
1908-09	4,156,649	1,248,457	1,695,212	1,212,980	460,197	460,197	4/	4,616,846	1,708,654	1,695,212	1,212,980
1907-08	3,273,739	1,153,923	1,077,393	1,042,423	527,536	527,536	4/	3,801,275	1,681,459	1,077,393	1,042,423
5-year average	4,195,834	1,260,358	1,715,689	1,219,787	546,626	544,343	-	4,742,460	1,804,701	1,715,689	1,222,070
1906-07	3,714,840	961,936	1,598,994	1,153,910	518,919	518,919	4/	4,233,759	1,480,855	1,598,994	1,153,910
1905-06	3,642,723	1,065,372	1,320,199	1,257,152	340,006	340,006	4/	3,982,729	1,405,373	1,320,199	1,257,152
1904-05	3,361,996	992,965	1,302,849	1,066,182	251,331	251,331	4/	3,613,327	1,244,296	1,302,849	1,066,182
1903-04	3,064,956	790,611	1,165,056	1,109,289	249,429	249,429	4/	3,314,385	1,040,040	1,165,056	1,109,289
1902-03	3,110,834	916,483	1,118,743	1,075,608	234,242	234,242	4/	3,345,076	1,150,725	1,118,743	1,075,608
5-year average	3,379,069	945,473	1,301,168	1,132,428	318,785	318,785	4/	3,697,854	1,264,258	1,301,168	1,132,428

Source: Basic figures from Willett & Gray's Weekly Statistical Sugar Trade Journal.

1/ Includes U.S. continental and U.S. insular areas in Western Hemisphere (Puerto Rico, Hawaii, and Virgin Islands). The Philippine Islands are not included.
2/ Includes cane sugar production of Mexico, Central America, South America, and West Indies (except Cuba). 3/ Preliminary figures. 4/ No data available for these years.

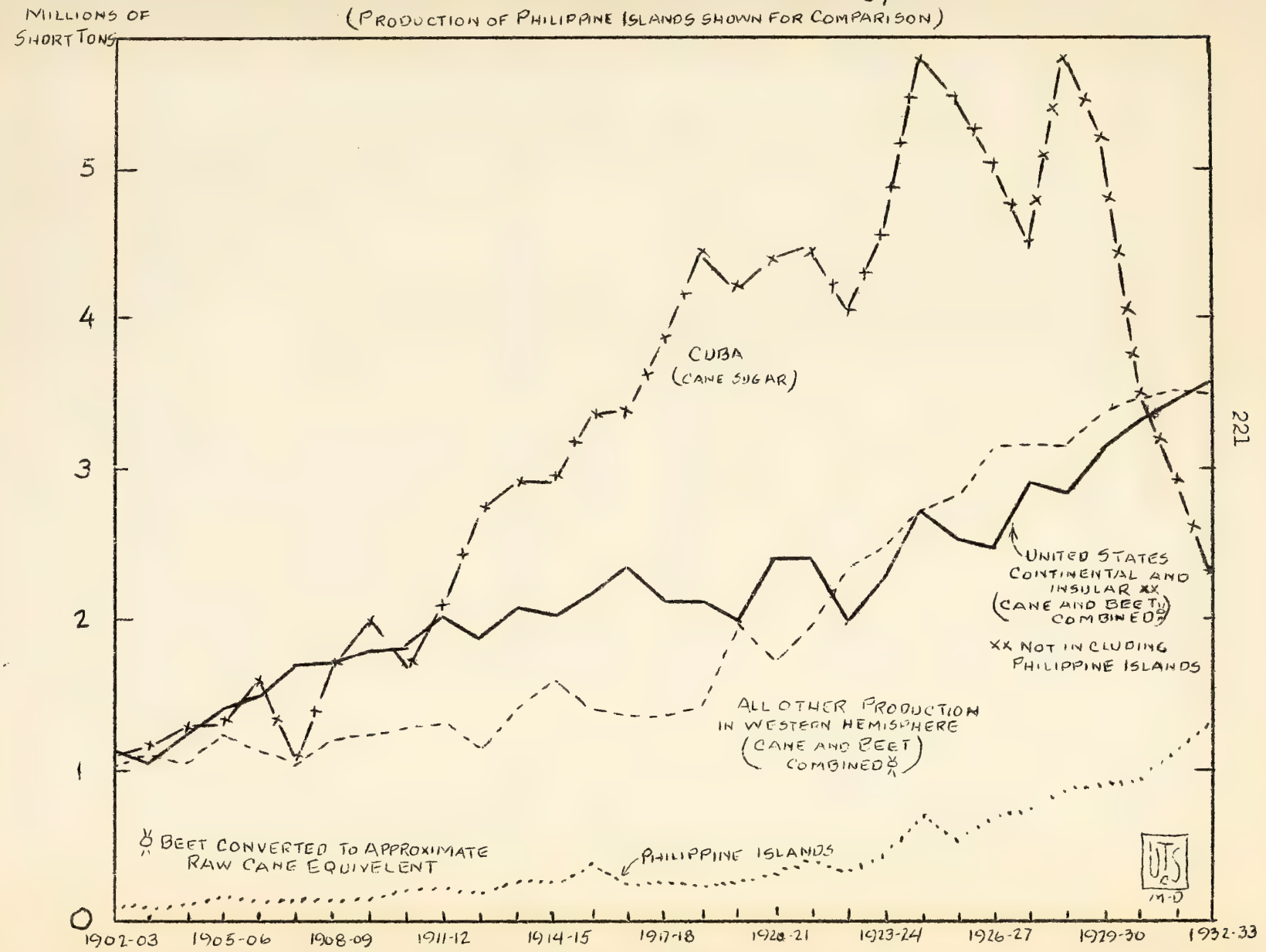
SUMMARY OF SUGAR PRODUCTION IN WESTERN HEMISPHERE DURING CROP YEARS FROM 1902-03 TO 1932-33, INCLUSIVE

(PRODUCTION OF PHILIPPINE ISLANDS SHOWN FOR COMPARISON)



SUMMARY OF SUGAR PRODUCTION IN WESTERN HEMISPHERE DURING CROP YEARS FROM 1902-03 TO 1932-33, INCLUSIVE

(PRODUCTION OF PHILIPPINE ISLANDS SHOWN FOR COMPARISON)



nclusive

	Beet sugar production					
	Total cane all countries	United States 1/	Canada 1/	Europe	Total beet sugar	Total cane and beet sugar all countries
1932- 33	18,475,605	1,351,455	64,152	7,301,037	8,716,644	27,192,249
1931- 41	19,055,773	1,148,243	54,044	8,328,590	9,530,877	29,486,650
1930- 6	19,208,552	1,204,771	45,867	11,435,068	12,685,706	31,894,258
1929- 78	20,346,534	1,009,919	31,213	9,214,461	10,255,593	30,602,126
1928- 87	20,270,643	1,051,277	32,320	9,478,906	10,562,503	30,833,146
1927- 7	19,104,616	1,081,070	30,477	8,995,699	10,107,246	29,211,862
1926- 70	18,381,910	897,396	35,192	7,696,519	8,629,107	27,011,017
5-yea 4	19,462,451	1,048,887	35,013	9,364,131	10,448,031	29,910,482
1925- 04	17,960,807	900,972	36,372	8,347,688	9,285,032	27,245,839
1924- 3	17,802,776	1,091,087	40,544	7,933,036	9,064,667	26,867,443
1923- 4	15,945,478	881,683	18,480	5,664,692	6,564,855	22,510,333
1922- 1	14,738,862	689,848	13,888	5,123,244	5,826,980	20,565,842
1921- 7	14,238,379	1,020,533	21,203	4,490,805	5,532,541	19,770,920
5-yea 2	16,137,260	916,825	26,098	6,311,893	7,254,816	23,392,076
1920- 2	13,384,062	1,085,749	38,752	4,149,532	5,274,033	18,658,095
1919- 0	13,696,620	731,312	18,480	2,916,862	3,666,654	17,363,274
1918- 2	13,347,692	755,879	24,976	3,568,108	4,348,963	17,696,655
1917- 9	13,851,607	764,811	12,600	4,039,683	5,617,094	19,468,781
1916- 1	12,691,037	822,726	14,000	5,628,882	6,465,608	19,157,445
5-yea 5	13,394,380	832,095	21,762	4,220,613	5,074,470	18,468,850
1915- 6	11,889,781	873,327	19,756	6,111,415	7,004,500	18,894,281
1914- 2	11,399,484	723,808	15,656	8,564,127	9,303,591	20,703,075
1913- 4	10,977,720	733,934	13,076	8,924,125	9,671,135	20,648,855
1912- 0	10,404,333	698,952	13,365	9,276,530	9,988,875	20,393,210
1911- 2	10,276,146	606,033	10,665	7,089,274	7,715,972	17,992,118
5-yea 4	10,989,493	727,211	14,508	7,995,096	8,736,815	19,726,308
1910- 0	9,433,141	509,846	-	9,077,741	9,587,587	19,020,728
1909- 8	9,329,627	504,667	-	6,873,340	7,378,007	16,707,634
1908- 6	8,552,139	430,091	-	7,329,129	7,759,220	16,311,359
1907- 6	7,747,782	493,024	-	7,349,747	7,842,771	15,590,553
1906- 4	8,208,835	484,971	-	7,516,105	8,001,076	16,209,911
5-yea 2	8,654,305	484,520	-	7,629,213	8,113,732	16,768,037

Basic

1/ Be

2/ T... ...ller year (in the hyphenated period) mentioned is the year of its planting, ...s the year in which much of the crop was marketed. The production of cane ...ne revised method of reporting this would be the production of 1922-23.

3/ Vi...

Table 7. - Sugar: Summary statistics of world sugar production, crop-years from 1906-07 to 1932-33, inclusive

(Short tons)

Crop year	Cane sugar production													Beet sugar production				Total cane and beet sugar all countries
	United States insular areas																	
	Continental United States	Hawaii	Virgin Islands	Puerto Rico	Philippines	Total insular	Total cane continental United States and United States insular	Cuba	Continental U.S., U.S. insular and Cuba	Java	British India	All other countries (cane)	Total cane all countries	United States 1/	Canada 1/	Europe	Total beet sugar	
1932-33 (preliminary)	256,759	1,008,000	5,600	834,306	1,282,782	3,130,690	3,387,449	2,254,488	5,623,937	1,539,165	5,209,120	6,103,383	18,475,605	1,351,455	64,152	7,301,037	8,716,644	27,192,249
1931-32	180,239	1,029,352	4,577	992,450	1,100,709	3,123,088	3,303,308	2,915,207	6,218,515	2,877,717	4,446,400	6,413,141	19,955,773	1,148,243	54,044	8,328,590	9,530,877	29,486,650
1930-31	210,093	996,287	2,016	767,795	676,201	2,662,300	2,872,394	3,476,848	6,369,242	3,134,734	3,604,160	6,100,416	19,208,552	1,204,771	45,867	11,435,068	12,685,706	31,894,258
1929-30	199,610	924,998	6,424	866,107	866,515	2,664,044	2,863,654	5,231,811	8,095,465	3,273,771	3,032,320	5,684,978	20,346,534	1,009,919	31,213	9,214,461	10,255,593	30,602,126
1928-29	132,054	945,797	4,252	593,730	829,995	2,373,764	2,505,738	5,775,073	8,280,811	3,242,265	3,063,200	5,684,367	20,270,643	1,051,277	32,320	9,478,906	10,562,503	30,833,146
1927-28	70,792	904,042	11,829	751,231	697,428	2,364,630	2,435,422	4,493,123	6,928,545	3,272,864	3,601,920	5,282,287	19,104,616	1,032,070	30,477	8,935,699	10,107,246	29,211,862
1926-27	47,165	811,331	7,926	630,241	654,347	2,103,845	2,150,970	5,045,282	7,196,252	2,642,388	3,645,600	4,896,770	18,381,910	897,396	35,112	7,696,519	8,629,107	27,011,017
5-year average	131,942	916,492	6,489	725,833	764,879	2,433,673	2,565,636	4,806,429	7,374,964	3,117,184	3,401,440	5,569,764	19,462,451	1,048,887	35,013	9,364,131	10,448,031	29,910,482
1925-26	139,381	789,992	6,344	606,765	487,109	1,891,908	2,031,289	5,470,817	7,502,106	2,930,257	3,334,240	4,094,104	17,960,807	900,972	36,372	8,347,688	9,285,032	27,245,839
1924-25	68,432	775,940	5,064	666,521	655,792	2,095,327	2,163,809	5,741,086	7,904,895	2,550,368	2,853,760	4,471,753	17,802,776	1,091,087	40,544	7,933,036	9,064,667	26,867,443
1923-24	164,812	701,432	2,612	447,972	417,012	1,569,028	1,733,840	4,554,639	6,288,479	2/1,984,385	3,743,040	3,957,574	15,945,478	881,683	13,480	5,664,692	6,564,855	22,510,333
1922-23	298,315	536,999	1,248	379,071	295,249	1,213,067	1,511,382	4,035,259	5,546,641	1,856,500	3,409,280	3,826,441	14,738,862	689,848	13,888	5,123,244	5,826,980	20,565,842
1921-22	327,694	562,456	4,600	405,335	376,753	1,352,738	1,680,426	4,475,353	6,156,379	2,547,583	2,430,400	3,398,027	14,232,379	1,020,533	21,203	4,490,805	5,532,541	19,770,920
5-year average	205,737	673,364	4,914	499,995	446,443	1,624,442	1,824,749	4,655,551	6,603,700	2,114,834	3,229,744	4,109,582	16,137,266	916,825	26,018	6,311,893	7,254,816	23,392,076
1920-21	176,102	564,562	5,040	491,113	266,544	1,347,259	1,523,361	4,408,365	5,931,726	1,689,806	2,807,078	2,955,452	13,384,062	1,085,749	38,752	4,149,532	5,274,033	18,658,095
1919-20	223,239	569,405	13,868	465,804	234,457	1,303,714	1,426,953	4,177,666	5,604,619	1,406,055	3,415,056	3,180,870	13,696,620	731,312	18,480	2,916,862	3,666,654	17,363,274
1918-19	284,396	641,740	10,868	496,132	218,724	1,236,646	1,521,044	4,440,389	5,961,433	1,693,537	2,654,400	2,764,522	13,347,692	755,879	24,976	3,568,108	4,348,963	17,696,655
1917-18	245,649	573,858	6,480	463,633	242,211	1,285,750	1,531,399	3,959,613	5,491,212	1,791,726	3,708,320	2,760,409	13,851,607	764,411	12,600	4,039,683	5,617,094	19,468,701
1916-17	310,499	649,785	6,480	488,395	226,974	1,371,734	1,682,233	5,065,241	6,747,474	1,707,715	3,055,360	2,763,421	14,691,970	822,726	14,000	5,628,880	6,465,606	21,157,445
5-year average	228,097	591,880	5,756	461,081	241,782	1,312,242	1,540,846	4,456,124	5,596,470	1,741,952	3,128,043	2,884,935	13,974,390	832,095	21,762	4,220,613	5,074,470	18,460,550
1915-16	138,620	593,403	3/10,320	463,095	372,017	3/1,446,595	3/1,507,215	3,360,065	3/4,956,080	1,342,395	2,953,300	3/2,630,006	12,881,781	873,327	14,750	6,111,415	7,004,500	18,894,261
1914-15	246,514	646,440	5,040	341,749	280,601	1,274,230	1,470,722	2,903,707	4,374,429	1,757,211	2,755,842	2,809,722	11,699,484	723,608	15,656	8,564,127	9,303,391	20,703,075
1913-14	300,537	617,036	6,490	364,624	256,692	1,344,752	1,542,209	2,909,460	4,451,669	1,485,107	2,566,460	2,534,564	12,077,720	733,934	13,076	8,924,125	9,671,135	20,648,855
1912-13	162,677	546,799	7,503	394,062	173,695	1,284,036	1,446,713	2,719,961	4,001,161	1,490,922	2,645,632	2,010,614	11,148,389	674,352	13,076	8,076,352	8,963,775	20,393,210
1911-12	264,274	522,824	7,252	403,260	81,240	1,214,576	1,478,850	2,423,582	3,744,288	1,440,400	2,742,232	2,264,228	10,870,146	666,632	10,665	7,037,274	7,715,972	17,992,118
5-year average	241,624	534,996	6,677	366,796	250,549	1,252,442	1,442,469	2,805,115	4,297,564	1,456,047	2,702,893	2,452,964	10,589,493	727,211	14,508	7,742,026	8,726,815	19,726,508
1910-11	355,040	566,826	16,800	330,400	228,238	1,125,466	1,480,506	1,661,465	3,141,971	1,376,592	2,465,568	2,421,010	9,433,141	509,846	-	9,077,741	9,587,587	19,020,728
1909-10	375,200	518,126	16,800	344,960	130,048	993,134	1,368,334	2,420,871	3,789,205	1,344,692	2,362,552	2,213,378	9,709,827	504,667	-	6,673,340	7,378,007	16,707,834
1908-09	424,400	535,155	15,680	283,222	137,993	956,370	1,380,770	1,691,219	3,065,989	1,330,911	2,[illegible]648	1,997,596	8,998,139	430,091	-	7,329 10	7 759,220	16,311,359
1907-08	391,240	521,125	14,560	224,000	158,150	903,282	1,294,521	1,077,293	2,374,814	1,295,254	2,232,[illegible]	1,[illegible]56	7,747,732	493,024	-	7,[illegible]747	7,842,771	15,590,503
1906-07	272,160	440,016	14,560	244,200	136,614	811,830	1,083,990	1,598,994	2,682,984	1,132,931	2,467,936	1,922,984	8,208,835	484,971	-	7,516,105	8,001,076	16,209,911
5-year average	362,208	516,250	15,680	305,556	158,210	958,016	1,320,524	1,816,757	2,031,011	1,308,076	2,317,206	2,168,612	8,634,215	464,520	-	7,629,213	8,113,732	16,760,037

Basic figures from Weekly Statistical Sugar Trade Journal. Issue of November 2, 1933, and earlier issues for years prior to 1930-31

1/ Beet sugar crops of United States and Canada are shown on refined sugar basis.

2/ The bulk of Javan sugar is harvested during the period from April to September in the year after its planting. For the years in the table following 1923-24, the earlier year (in the hyphenated period) mentioned is the year of its planting, the later year mentioned is the year of harvest. In earlier crop years, the earlier year of the hyphenated period is the year of harvesting while the later year is the year in which much of the crop was marketed. The production of cane planted in 1923 and harvested in 1924 is estimated at 2,214,768 short tons. The production of cane for 1923-24 shown in the table is 1,984,385 short tons. Under the revised method of reporting this would be the production of 1922-23. Similarly, the production of each year shown in the table would be the prior crop year under the revised method.

3/ Virgin Islands included with United States insular in 1916-17 and subsequent years, included with "All other countries" in 1915-16 and years prior thereto.

Tables 8 to 8i, inclusive, which follow, afford an analysis of world sugar production by countries and geographical groups. They are based on estimates published in Willett and Gray's Weekly Statistical Sugar Trade Journal, issue of November 29, 1933, for the crop years 1930-31, 1931-32, 1932-33, and earlier issues of that Journal for prior crop years. Those estimates, particularly those for recent years, are subject to revision as later data become available.

Tables 8 to 8h, inclusive, are expressed in long tons of 2240 pounds. Table 8i shows the months during which the sugar crops are harvested in the principal countries. The processing period, during which the cane is ground or the beets are sliced, corresponds in general to the harvesting period.

The International Sugar Trade Journal (London), on page 250 of issue for July 1933, contains an editorial entitled "World Sugar Statistics." This editorial, in pointing out differences in methods used by different sugar statisticians of recognized authority and divergencies in their results, calls attention to the reasons therefor and the difficulties involved in compiling such data.

Statistics of production of sugar beets, beet sugar and cane sugar, in various countries throughout the world, are also published in the Statistical Year Book of the League of Nations. In the issue for 1932-33, these figures are shown on pages 77-79, inclusive. In 1929 the League published a memorandum on sugar (official number: C.148 M.57 1929. II) and a report on the world sugar situation (official number: C.303 M.104 1929. II).

	Estimates		
	In issue of Nov. 29, 1933	In issue of Dec. 21, 1933	Change
	(Long tons)	(Long tons)	(Long tons)
Cane sugar			
Virgin Islands	5,000	4,230	-770
Hawaii	900,000	924,595	+24,595
Mexico	177,000	209,576	+32,576
Egypt	125,000	168,251	+43,251
Formosa and Japan	798,575	797,678	-897
Australia	532,618	538,022	+5,404
Spain	24,000	19,671	-4,329
World total (cane)	16,496,076	16,595,906	+99,830
Beet sugar			
Russia & Ukraine	1,000,000	800,000	-200,000
"Other" European countries	91,441	95,676	+4,235
World total (beet)	7,782,718	7,586,953	-195,765
Cane and beet sugar combined World total	24,278,794	24,182,859	-95,935

1/ In the issue of the Weekly Statistical Sugar Trade Journal for December 21, 1933, page 525, changes were made in the estimates for the crop year 1932-33, as noted below. Estimates for countries not listed remain unchanged.

Table 8 inclusive

Crop year 1/	sugar and beet sugar combined	
	Eastern Hemisphere	World total
1932-33 2/	16,060,061	24,278,794
1931-32 2/	17,563,450	26,327,366
1930-31	19,410,429	28,477,016
1929-30	16,975,222	27,323,327
1928-29	17,130,951	27,529,595
1927-28	16,757,749	26,082,020
1926-27	14,686,661	24,116,980
5-year average	16,992,203	26,705,788
1925-26	14,775,344	24,326,642
1924-25	14,098,430	23,988,789
1923-24	11,864,897	20,098,512
1922-23	10,983,617	18,362,359
1921-22	9,351,559	17,652,607
5-year average	12,314,769	20,885,782
1920-21	9,127,953	16,659,013
1919-20	8,295,614	15,502,923
1918-19	8,728,010	15,800,585
1917-18	10,888,130	17,382,840
1916-17	10,819,921	17,104,862
5-year average	9,571,926	16,490,045
1915-16	10,729,069	16,869,894
1914-15	12,715,474	18,484,889
1913-14	12,768,408	18,436,478
1912-13	13,149,595	18,208,221
1911-12	11,215,795	16,064,391
5-year average	12,115,669	17,612,775
1910-11	12,766,608	16,982,793
1909-10	10,444,048	14,917,530
1908-09	10,468,409	14,563,713
1907-08	10,556,956	13,920,137
1906-07	10,723,304	14,473,135
5-year average	10,991,865	14,971,462
1905-06	10,411,077	13,947,225
1904-05	6,302,372	9,513,262
1903-04	7,378,928	10,323,631
1902-03	6,947,668	9,920,661
1901-02	8,088,029	10,993,346
5-year average	7,825,615	10,939,626

Source: Based on estimates p

1/ The harvesting period in

2/ Preliminary; subject to

Table 8 . - Sugar: World production of cane and beet sugar, summarized by crop years from 1901-02 to 1932-33, inclusive

(In long tons)

Crop year 1/	Cane sugar (principally raws)			Beet sugar production			Cane sugar and beet sugar combined		
	Western Hemisphere	Eastern Hemisphere	World total	Western Hemisphere (refined)	Eastern Hemisphere (principally raws)	World total (principally raws)	Western Hemisphere	Eastern Hemisphere	World total
1932-33 2/	6,954,798	9,541,278	16,496,076	1,263,935	6,518,783	7,782,718	8,218,733	16,060,061	24,278,794
1931-32 2/	7,690,445	10,127,209	17,817,654	1,073,471	7,436,241	8,509,712	8,763,916	17,563,450	26,327,366
1930-31	7,949,946	9,200,547	17,150,493	1,116,641	10,209,882	11,326,523	9,066,587	19,410,429	28,477,016
1929-30	9,418,523	8,748,025	18,166,548	929,582	8,227,197	9,156,779	10,348,105	16,975,222	27,323,327
1928-29	9,431,147	8,667,642	18,098,789	967,497	8,463,309	9,430,806	10,398,644	17,130,951	27,529,595
1927-28	8,331,818	8,725,875	17,057,693	992,453	8,031,874	9,024,327	9,324,271	16,757,749	26,082,020
1926-27	8,597,651	7,814,769	16,412,420	832,668	6,871,892	7,704,560	9,430,319	14,686,661	24,116,980
5-year average	8,745,817	8,631,372	17,377,189	967,768	8,060,831	9,328,599	9,713,585	16,992,203	26,705,788
1925-26	8,714,384	7,322,051	16,036,435	836,914	7,453,293	8,290,207	9,551,298	14,775,344	24,326,642
1924-25	8,879,974	7,015,362	15,895,336	1,010,385	7,083,068	8,093,453	9,890,359	14,098,430	23,988,789
1923-24	7,429,898	6,807,136	14,237,034	803,717	5,057,761	5,861,478	8,233,615	11,864,897	20,098,512
1922-23	6,750,406	6,409,292	13,159,698	628,336	4,574,325	5,202,661	7,378,742	10,983,617	18,362,359
1921-22	6,870,927	5,841,911	12,712,838	930,121	4,009,648	4,939,769	7,801,048	9,851,559	17,652,607
5-year average	7,729,118	6,679,150	14,408,268	841,895	5,635,619	6,477,514	8,571,013	12,314,769	20,885,782
1920-21	6,527,041	5,423,014	11,950,055	1,004,019	3,704,939	4,708,958	7,531,060	9,127,953	16,659,013
1919-20	6,537,852	5,691,273	12,229,125	669,457	2,604,341	3,273,798	7,207,309	8,295,614	15,502,923
1918-19	6,375,383	5,542,199	11,917,582	697,192	3,185,811	3,883,003	7,072,575	8,728,010	15,800,585
1917-18	5,800,593	6,566,985	12,367,578	694,117	4,321,145	5,015,262	6,494,710	10,888,130	17,382,840
1916-17	5,537,864	5,794,134	11,331,998	747,077	5,035,787	5,772,864	6,284,941	10,819,921	17,104,862
5-year average	6,155,747	5,803,521	11,959,268	762,372	3,758,405	4,530,777	6,918,119	9,571,926	16,490,045
1915-16	5,343,428	5,272,448	10,615,876	797,397	5,456,621	6,254,018	6,140,825	10,729,069	16,869,894
1914-15	5,109,179	5,068,932	10,178,111	660,236	7,646,542	8,306,778	5,769,415	12,715,474	18,484,889
1913-14	5,001,097	4,800,439	9,801,536	666,973	7,967,969	8,634,942	5,668,070	12,768,408	18,436,478
1912-13	4,422,611	4,866,972	9,289,583	636,015	8,282,623	8,918,638	5,058,626	13,149,595	18,208,221
1911-12	4,297,973	4,877,157	9,175,130	550,623	6,338,638	6,889,261	4,848,596	11,215,795	16,064,391
5-year average	4,834,858	4,977,190	9,812,048	662,249	7,138,478	7,800,727	5,497,106	12,115,669	17,612,775
1910-11	3,760,965	4,661,482	8,422,447	455,220	8,105,126	8,560,346	4,216,185	12,766,608	16,982,793
1909-10	4,022,887	4,307,137	8,330,024	450,595	6,136,911	6,587,506	4,473,482	10,444,048	14,917,530
1908-09	3,711,294	3,924,544	7,635,838	384,010	6,543,865	6,927,875	4,095,304	10,468,409	14,563,713
1907-08	2,922,981	3,994,682	6,917,663	440,200	6,562,274	7,002,474	3,363,181	10,556,956	13,920,137
1906-07	3,316,821	4,012,496	7,329,317	433,010	6,710,808	7,143,818	3,749,831	10,723,304	14,473,135
5-year average	3,546,990	4,180,069	7,727,053	432,607	6,811,797	7,244,404	3,979,597	10,991,865	14,971,462
1905-06	3,252,431	3,478,734	6,731,165	283,717	6,932,343	7,216,060	3,536,148	10,411,077	13,947,225
1904-05	3,001,168	1,593,614	4,594,782	209,722	4,708,758	4,918,480	3,210,890	6,302,372	9,513,262
1903-04	2,736,568	1,497,595	4,234,163	208,135	5,881,333	6,089,468	2,944,703	7,378,928	10,323,631
1902-03	2,777,530	1,386,411	4,163,941	195,463	5,561,257	5,756,720	2,972,993	6,947,668	9,920,661
1901-02	2,742,191	1,337,551	4,079,742	163,126	6,750,478	6,913,604	2,905,317	8,088,029	10,993,346
5-year average	2,901,978	1,858,781	4,760,759	212,033	5,966,834	6,178,867	3,114,011	7,825,615	10,939,626

Source: Based on estimates published in Willett & Grays Weekly Statistical Sugar Trade Journal.

1/ The harvesting period in different countries is shown in table 8i , in the Appendix.

2/ Preliminary; subject to revision, as are figures for these two crop years shown in tables 8a to 8h , inclusive.

Table 8a inclusive

(In the earlier years shown nts) represent exports
where figures for product British India prior to
1905-06 represented exp sia (See table 8f))

Crop year	North cane Americ stern (cane sphere (For det see tab	Total world production cane sugar
1932-33 1/	5,039, 41,278	16,496,076
1931-32 1/	5,726, 27,209	17,817,654
1930-31	5,977, 00,547	17,150,493
1929-30	7,469, 48,025	18,166,548
1928-29	7,558, 67,642	18,098,789
1927-28	6,536, 25,875	17,057,693
1926-27	6,740, 14,769	16,412,420
5-year average	6,856, 31,372	17,377,189
1925-26	7,200, 22,051	16,036,435
1924-25	7,367, 15,362	15,895,336
1923-24	5,918, 07,136	14,237,034
1922-23	5,314, 09,292	13,159,698
1921-22	5,708, 41,911	12,712,838
5-year average	6,302, 79,150	14,408,268
1920-21	5,588, 23,014	11,950,055
1919-20	5,349, 91,273	12,229,125
1918-19	5,627, 42,199	11,917,582
1917-18	5,036, 66,985	12,367,578
1916-17	4,814, 94,134	11,331,998
5-year average	5,283, 03,521	11,959,268
1915-16	4,584, 72,448	10,615,876
1914-15	4,172, 68,932	10,178,111
1913-14	4,206, 00,439	9,801,536
1912-13	3,843, 66,972	9,289,583
1911-12	3,586, 77,157	9,175,130
5-year average	4,078, 77,190	9,812,048
1910-11	3,075, 61,482	8,422,447
1909-10	3,391, 07,137	8,330,024
1908-09	3,019, 24,544	7,635,838
1907-08	2,383, 94,682	6,917,663
1906-07	2,688, 12,496	7,329,317
5-year average	2,911, 80,069	7,727,058
1905-06	2,552, 78,734	6,731,165
1904-05	2,410, 93,614	4,594,782
1903-04	2,135, 97,595	4,234,163
1902-03	2,198, 86,411	4,163,941
1901-02	1,980, 37,551	4,079,742
5-year average	2,255, 58,781	4,760,759

Source: Based on estimates publis

1/ Preliminary; subject to revis

2/ Includes exports (not producti

Table 8a. - Raw cane sugar: Summary of world production by continents, for crop years from 1901-02 to 1932-33, inclusive

(In the earlier years shown in this table, the figures for some of the countries (which make up the totals for the separate continents) represent exports where figures for production have not been available or could not be estimated with reasonable accuracy. Thus the figures for British India prior to 1905-06 represented exports; after that year, estimated production substantially affecting the total production reported for Asia (See table 8f))

(In long tons)

Crop year	North America (cane) (For detail see table 8b)	South America (cane) (For detail see table 8e)	Total cane Western Hemisphere	Europe (cane) (For detail see table 8f)	Asia (cane) (For detail see table 8f)	Africa (cane) (For detail see table 8f)	Oceania (cane) (For detail see table 8f)	Total cane Eastern Hemisphere	Total world production cane sugar
1932-33 1/	5,039,957	1,914,841	6,954,798	24,000	7,969,170	880,249	667,859	9,541,278	16,496,076
1931-32 1/	5,726,730	1,963,715	7,690,445	25,740	8,669,716	746,816	684,937	10,127,209	17,817,654
1930-31	5,977,940	1,972,006	7,949,946	22,687 v	7,727,943	818,419	631,498	9,200,547	17,150,493
1929-30	7,469,943	1,948,580	9,418,523	13,562	7,381,557	732,635	620,271	8,748,025	18,166,548
1928-29	7,558,751	1,872,396	9,431,147	11,610	7,274,498	748,468	633,066	8,667,642	18,098,789
1927-28	6,536,816	1,795,002	8,331,818	10,552	7,470,800	656,360	588,163	8,725,875	17,057,693
1926-27	6,740,783	1,856,868	8,597,651	6,719	6,722,371	600,997	484,682	7,814,769	16,412,420
5-year average	6,856,847	1,888,970	8,745,817	13,026	7,315,434	711,376	591,536	8,631,372	17,377,189
1925-26	7,200,921	1,513,463	8,714,384	8,704	6,021,679	668,514	623,154	7,322,051	16,036,435
1924-25	7,367,198	1,512,776	8,879,974	8,087	5,962,437	545,260	499,578	7,015,362	15,895,336
1923-24	5,918,318	1,511,580	7,429,898	7,871	5,909,840	572,022	317,403	6,807,136	14,237,034
1922-23	5,314,973	1,435,433	6,750,406	13,918	5,460,112	556,853	378,409	6,409,292	13,159,698
1921-22	5,708,892	1,162,035	6,870,927	13,805	4,927,236	528,781	372,089	5,841,911	12,712,838
5-year average	6,302,060	1,427,058	7,729,118	10,477	5,656,261	574,286	438,126	6,679,150	14,408,268
1920-21	5,588,360	938,681	6,527,041	6,886	4,613,094	562,648	240,386	5,423,014	11,950,055
1919-20	5,349,665	1,188,187	6,537,852	6,048	4,877,738	580,841	226,646	5,691,273	12,229,125
1918-19	5,627,926	747,457	6,375,383	6,618	4,730,375	531,005	274,201	5,542,199	11,917,582
1917-18	5,036,895	763,698	5,800,593	7,039	5,703,223	469,454	387,269	6,566,985	12,367,578
1916-17	4,814,657	723,207	5,537,864	4,584	5,001,909	498,910	288,731	5,794,134	11,331,998
5-year average	5,283,501	872,246	6,155,747	6,235	1,985,268	528,572	283,446	5,803,521	11,959,268
1915-16	4,584,231	759,197	5,343,428	4,264	4,502,042	486,561	279,581	5,272,448	10,615,876
1914-15	4,172,897	936,282	5,109,179	5,595	4,188,451	531,578	343,308	5,068,932	10,178,111
1913-14	4,206,092	795,005	5,001,097	7,376	3,953,728	480,956	358,379	4,800,439	9,801,536
1912-13	3,843,107	579,504	4,422,611	13,231	4,183,081	446,167	224,493	4,866,972	9,289,583
1911-12	3,586,678	711,295	4,297,973	16,176	4,219,705	388,953	252,323	4,877,157	9,175,130
5-year average	4,078,601	756,257	4,834,858	9,328	4,209,402	466,843	291,617	4,977,190	9,812,048
1910-11	3,075,568	685,397	3,760,965	20,293	3,926,284	416,321	298,584	4,661,482	8,422,447
1909-10	3,391,315	631,572	4,022,887	20,300	3,648,832	419,771	218,234	4,307,137	8,330,024
1908-09	3,019,701	691,593	3,711,294	21,669	3,359,993	311,784	231,098	3,924,544	7,635,838
1907-08	2,383,463	539,518	2,922,981	14,047	3,413,040	286,870	280,725	3,994,682	6,917,663
1906-07	2,688,044	628,777	3,316,821	16,400	3,420,271	326,825	249,000	4,012,496	7,329,317
5-year average	2,911,618	635,372	3,546,990	18,542	3,553,684	352,315	255,528	4,180,069	7,727,058
1905-06	2,552,395	700,036	3,252,431	15,722	2,910,251	322,761	230,000	3,478,734	6,731,165
1904-05	2,410,786	590,382	3,001,168	18,592	2/ 1,126,708	232,101	216,213	2/ 1,593,614	4,594,782
1903-04	2,135,434	601,134	2,736,568	28,000	2/ 984,561	321,706	163,328	2/ 1,497,595	4,234,163
1902-03	2,198,508	579,022	2,777,530	28,000	2/ 947,812	277,473	133,126	2/ 1,386,411	4,163,941
1901-02	1,980,386	761,805	2,742,191	28,000	2/ 860,767	278,926	169,858	2/ 1,337,551	4,079,742
5-year average	2,255,502	646,476	2,901,978	23,663	1,366,020	286,593	182,505	1,858,781	4,760,759

Source: Based on estimates published in Willett and Gray's Weekly Statistical Sugar Trade Journal.

1/ Preliminary; subject to revision.

2/ Includes exports (not production) of British India.

Table inclusive

(In the earlier years sho nts) represent exports
where figures for produ ritish India prior to
1905-06 represented e sia (See table 8f))

Crop year	Nor l cane Amer tern (ca sphere	Total world production cane sugar
	(For d see t	
1932-33 1/	5,03 41,278	16,496,076
1931-32 1/	5,72 27,209	17,817,654
1930-31	5,97 00,547	17,150,493
1929-30	7,46 48,025	18,166,548
1928-29	7,55 67,642	18,098,789
1927-28	6,53 25,875	17,057,693
1926-27	6,74 14,769	16,412,420
5-year average	6,85 31,372	17,377,189
1925-26	7,20 22,051	16,036,435
1924-25	7,36 15,362	15,895,336
1923-24	5,91 07,136	14,237,034
1922-23	5,31 09,292	13,159,698
1921-22	5,70 41,911	12,712,838
5-year average	6,30 79,150	14,408,268
1920-21	5,58 23,014	11,950,055
1919-20	5,34 91,273	12,229,125
1918-19	5,62 42,199	11,917,582
1917-18	5,03 66,985	12,367,578
1916-17	4,81 94,134	11,331,998
5-year average	5,28 03,521	11,959,268
1915-16	4,58 72,448	10,615,876
1914-15	4,17 68,932	10,178,111
1913-14	4,20 00,439	9,801,536
1912-13	3,84 66,972	9,289,583
1911-12	3,58 77,157	9,175,130
5-year average	4,07 77,190	9,812,048
1910-11	3,07 61,482	8,422,447
1909-10	3,39 07,137	8,330,024
1908-09	3,01 24,544	7,635,838
1907-08	2,38 94,682	6,917,663
1906-07	2,68 12,496	7,329,317
5-year average	2,91 80,069	7,727,058
1905-06	2,55 78,734	6,731,165
1904-05	2,41 93,614	4,594,782
1903-04	2,13 97,595	4,234,163
1902-03	2,19 86,411	4,163,941
1901-02	1,98 37,551	4,079,742
5-year average	2,25 58,781	4,760,759

Source: Based on estimates publ
1/ Preliminary; subject to rev
2/ Includes exports (not produc

Table 8a. - Raw cane sugar: Summary of world production by continents, for crop years from 1901-02 to 1932-33, inclusive

(In the earlier years shown in this table, the figures for some of the countries (which make up the totals for the separate continents) represent exports where figures for production have not been available or could not be estimated with reasonable accuracy. Thus the figures for British India prior to 1905-06 represented exports; after that year, estimated production substantially affecting the total production reported for Asia (See table 8f))

(In long tons)

Crop year	North America (cane) (For detail see table 8b)	South America (cane) (For detail see table 8e)	Total cane Western Hemisphere	Europe (cane) (For detail see table 8f)	Asia (cane) (For detail see table 8f)	Africa (cane) (For detail see table 8f)	Oceania (cane) (For detail see table 8f)	Total cane Eastern Hemisphere	Total world production cane sugar
1932-33 1/	5,039,957	1,914,841	6,954,798	24,000	7,969,170	880,249	667,859	9,541,278	16,496,076
1931-32 1/	5,726,730	1,963,715	7,690,445	25,740	8,669,716	746,816	684,937	10,127,209	17,817,654
1930-31	5,977,940	1,972,006	7,949,946	22,687 v	7,727,943	818,419	631,498	9,200,547	17,150,493
1929-30	7,469,943	1,948,580	9,418,523	13,562	7,381,557	732,635	620,271	8,748,025	18,166,548
1928-29	7,558,751	1,872,396	9,431,147	11,610	7,274,498	748,468	633,066	8,667,642	18,098,789
1927-28	6,536,816	1,795,002	8,331,818	10,552	7,470,800	656,360	588,163	8,725,875	17,057,693
1926-27	6,740,783	1,856,868	8,597,651	6,719	6,722,371	600,997	484,682	7,814,769	16,412,420
5-year average	6,856,847	1,888,970	8,745,817	13,026	7,315,434	711,376	591,536	8,631,372	17,377,189
1925-26	7,200,921	1,513,463	8,714,384	8,704	6,021,679	668,514	623,154	7,322,051	16,036,435
1924-25	7,367,198	1,512,776	8,879,974	8,087	5,962,437	545,260	499,578	7,015,362	15,895,336
1923-24	5,918,318	1,511,580	7,429,898	7,871	5,909,840	572,022	317,403	6,807,136	14,237,034
1922-23	5,314,973	1,435,433	6,750,406	13,918	5,460,112	556,853	378,409	6,409,292	13,159,698
1921-22	5,708,892	1,162,035	6,870,927	13,805	4,927,236	528,781	372,089	5,841,911	12,712,838
5-year average	6,302,060	1,427,058	7,729,118	10,477	5,656,261	574,286	438,126	6,679,150	14,408,268
1920-21	5,588,360	938,681	6,527,041	6,886	4,613,094	562,648	240,386	5,423,014	11,950,055
1919-20	5,349,665	1,188,187	6,537,852	6,048	4,877,738	580,841	226,646	5,691,273	12,229,125
1918-19	5,627,926	747,457	6,375,383	6,618	4,730,375	531,005	274,201	5,542,199	11,917,582
1917-18	5,036,895	763,698	5,800,593	7,039	5,703,223	469,454	387,269	6,566,985	12,367,578
1916-17	4,814,657	723,207	5,537,864	4,584	5,001,909	498,910	288,731	5,794,134	11,331,998
5-year average	5,283,501	872,246	6,155,747	6,235	1,985,268	528,572	283,446	5,803,521	11,959,268
1915-16	4,584,231	759,197	5,343,428	4,264	4,502,042	486,561	279,581	5,272,448	10,615,876
1914-15	4,172,897	936,282	5,109,179	5,595	4,188,451	531,578	343,308	5,068,932	10,178,111
1913-14	4,206,092	795,005	5,001,097	7,376	3,953,728	480,956	358,379	4,800,439	9,801,536
1912-13	3,843,107	579,504	4,422,611	13,231	4,183,081	446,167	224,493	4,866,972	9,289,583
1911-12	3,586,678	711,295	4,297,973	16,176	4,219,705	388,953	252,323	4,877,157	9,175,130
5-year average	4,078,601	756,257	4,834,858	9,328	4,209,402	466,843	291,617	4,977,190	9,812,048
1910-11	3,075,568	685,397	3,760,965	20,293	3,926,284	416,321	298,584	4,661,482	8,422,447
1909-10	3,391,315	631,572	4,022,887	20,300	3,648,832	419,771	218,234	4,307,137	8,330,024
1908-09	3,019,701	691,593	3,711,294	21,669	3,359,993	311,784	231,098	3,924,544	7,635,838
1907-08	2,383,463	539,518	2,922,981	14,047	3,413,040	286,870	280,725	3,994,682	6,917,663
1906-07	2,688,044	628,777	3,316,821	16,400	3,420,271	326,825	249,000	4,012,496	7,329,317
5-year average	2,911,618	635,372	3,546,990	18,542	3,553,684	352,315	255,528	4,180,069	7,727,058
1905-06	2,552,395	700,036	3,252,431	15,722	2,910,251	322,761	230,000	3,478,734	6,731,165
1904-05	2,410,786	590,382	3,001,168	18,592	2/ 1,126,708	232,101	216,213	2/ 1,593,614	4,594,782
1903-04	2,135,434	601,134	2,736,568	28,000	2/ 984,561	321,706	163,328	2/ 1,497,595	4,234,163
1902-03	2,198,508	579,022	2,777,530	28,000	2/ 947,812	277,473	133,126	2/ 1,386,411	4,163,941
1901-02	1,980,386	761,805	2,742,191	28,000	2/ 860,767	278,926	169,858	2/ 1,337,551	4,079,742
5-year average	2,255,502	646,476	2,901,978	23,663	1,366,020	286,593	182,505	1,858,781	4,760,759

Source: Based on estimates published in Willett and Gray's Weekly Statistical Sugar Trade Journal.

1/ Preliminary; subject to revision.

2/ Includes exports (not production) of British India.

Table 8b . - Raw c i) by specified areas;

Crop year	Mainland	Mexico	Central America	Total North America
	(For detail table 8c			
1932-33	231,03	177,000	130,000	5,039,957
1931-32	160,92	232,260	112,000	5,726,730
1930-31	187,58	260,623	133,569	5,977,940
1929-30	178,22	211,585	104,000	7,469,943
1928-29	117,90	179,124	73,774	7,558,751
1927-28	63,20	175,214	95,921	6,536,816
1926-27	42,11	181,858	111,172	6,740,783
5-year average	117,80	201,681	103,687	6,856,847
1925-26	124,44	190,282	87,651	7,200,921
1924-25	79,00	165,223	98,802	7,367,198
1923-24	147,16	166,932	76,131	5,918,318
1922-23	266,35	149,338	74,781	5,314,973
1921-22	292,58	129,218	47,067	5,708,892
5-year average	181,91	160,199	76,886	6,302,060
1920-21	157,23	110,700	54,192	5,588,360
1919-20	110,03	92,000	50,257	5,349,665
1918-19	253,92	70,000	27,681	5,627,926
1917-18	219,50	40,000	41,202	5,036,895
1916-17	277,58	50,000	31,377	4,814,657
5-year average	203,65	72,540	40,942	5,283,501
1915-16	123,76	65,000	35,000	4,584,231
1914-15	220,10	110,000	36,280	4,172,897
1913-14	268,33	127,944	22,000	4,206,092
1912-13	145,15	148,672	22,000	3,843,107
1911-12	322,20	151,735	20,389	3,586,678
5-year average	215,91	120,670	27,134	4,078,601
1910-11	317,00	161,602	20,215	3,075,568
1909-10	335,00	147,905	19,161	3,391,315
1908-09	370,00	143,179	19,696	3,019,701
1907-08	352,00	123,285	19,258	2,383,463
1906-07	243,00	119,496	19,747	2,688,044
5-year average	323,40	139,094	19,615	2,911,618
1905-06	342,00	107,529	18,516	2,552,395
1904-05	350,00	107,038	19,768	2,410,786
1903-04	234,80	107,547	21,450	2,135,434
1902-03	329,22	112,679	21,500	2,198,508
1901-02	321,67	103,110	20,500	1,980,386
5-year average	315,54	107,581	20,347	2,255,502

Source: Based on estimates pu ent years.

1/ Includes Puerto Rico and

2/ Crop restricted under in

3/ Not including Virgin Isla

4/ Including Virgin Islands

Table 8b . - Raw cane sugar: Summary of production in North America (with Central America, West Indies, and Hawaii) by specified areas; crop years 1901-02 to 1932-33, inclusive

(In long tons)

Crop year	United States areas: Mainland (For detail, see table 8c)	United States areas: U.S. insular areas in 1/ Western Hemisphere (For detail, see table 8c)	United States areas: Total U.S.	Cuba	West Indies: (Without Cuba, Puerto Rico and Virgin Islands) (For detail, see table 8d)	West Indies: (With Cuba, Puerto Rico and Virgin Islands) (For detail, see table 8d)	Mexico	Central America	Total North America
1932-33	231,035	1,649,918	1,880,953	2/ 1,995,079	856,925	3,601,922	177,000	130,000	5,039,957
1931-32	160,928	1,805,678	1,966,606	2/ 2,602,864	813,000	4,306,049	232,260	112,000	5,726,730
1930-31	187,583	1,594,732	1,782,315	3,122,186	679,247	4,506,621	260,623	133,369	5,977,940
1929-30	178,223	1,604,937	1,783,160	4,671,260	699,938	6,150,244	211,585	104,000	7,469,943
1928-29	117,905	1,378,374	1,496,279	5,156,315	653,259	6,343,486	179,124	73,774	7,558,751
1927-28	63,207	1,488,573	1,551,780	4,011,717	702,184	5,595,494	175,214	95,921	6,536,816
1926-27	42,112	1,294,159	1,336,271	4,504,716	606,766	5,681,228	181,858	111,172	6,740,783
5-year average	117,806	1,472,155	1,589,961	4,293,239	668,279	5,615,377	201,681	103,687	6,856,847
1925-26	124,447	1,252,499	1,376,946	4,884,658	661,384	6,093,191	190,282	87,651	7,200,921
1924-25	79,002	1,289,764	1,368,766	5,125,970	608,437	6,331,367	165,223	98,802	7,367,198
1923-24	147,164	1,028,586	1,175,750	4,066,642	432,863	4,901,812	166,932	76,131	5,918,318
1922-23	266,353	819,658	1,086,011	3,602,910	401,933	4,345,038	149,338	74,781	5,314,973
1921-22	292,589	869,636	1,162,225	3,996,387	372,995	4,737,824	149,218	47,067	5,708,892
5-year average	181,911	1,052,029	1,233,940	4,335,313	495,722	5,281,846	160,199	76,886	6,302,060
1920-21	157,234	947,067	1,104,301	3,936,040	383,127	4,762,161	110,700	54,192	5,588,360
1919-20	110,035	954,694	1,064,729	3,730,077	412,602	4,588,904	92,000	50,257	5,349,665
1918-19	253,927	908,859	1,162,786	3,971,776	395,683	4,739,077	70,000	27,681	5,627,926
1917-18	219,508	931,731	1,151,239	3,446,083	358,371	4,223,812	40,000	41,202	5,036,895
1916-17	277,589	1,036,519	1,314,108	3,083,720	395,452	3,875,526	50,000	31,377	4,814,657
5-year average	203,659	955,774	1,159,433	3,621,539	389,047	4,427,896	72,540	40,942	5,283,501
1915-16	123,768	3/ 961,230	1,084,998	3,007,915	4/ 391,318	3,830,568	65,000	35,000	4,584,231
1914-15	220,102	885,364	1,105,466	2,592,667	328,484	3,229,329	110,000	36,280	4,172,897
1913-14	268,337	875,946	1,144,283	2,597,732	314,133	3,236,886	127,944	22,000	4,206,092
1912-13	145,155	843,572	988,727	2,428,537	255,171	3,029,067	148,672	22,000	3,843,107
1911-12	322,209	898,625	1,220,834	1,895,984	297,736	2,560,865	151,735	20,389	3,586,678
5-year average	215,914	892,948	1,108,862	2,504,567	317,568	3,179,343	120,670	27,134	4,078,601
1910-11	317,000	801,096	1,118,096	1,483,451	292,204	2,070,655	161,602	20,215	3,075,568
1909-10	335,000	770,613	1,105,613	1,804,329	314,287	2,426,636	147,905	19,161	3,391,315
1908-09	370,000	730,694	1,100,694	1,513,582	242,550	2,009,009	143,179	19,696	3,019,701
1907-08	352,000	665,288	1,017,288	961,958	261,674	1,423,632	123,285	19,258	2,383,463
1906-07	243,000	602,871	845,871	1,427,673	275,257	1,902,930	119,496	19,747	2,688,044
5-year average	323,400	714,112	1,037,512	1,438,203	277,194	1,966,572	139,094	19,615	2,911,618
1905-06	342,000	596,225	938,225	1,178,749	309,376	1,701,125	107,529	18,516	2,552,395
1904-05	350,000	525,576	875,576	1,163,258	245,146	1,553,404	107,038	19,768	2,410,786
1903-04	234,800	458,103	692,903	1,040,228	272,306	1,443,534	107,547	21,450	2,135,434
1902-03	329,226	476,062	805,288	998,878	260,163	1,344,041	112,679	21,500	2,198,508
1901-02	321,676	402,509	724,185	850,181	282,410	1,417,291	103,110	20,500	1,980,386
5-year average	315,540	491,695	807,235	1,046,259	274,080	1,451,939	107,581	20,347	2,255,502

Source: Based on estimates published in Willett & Gray's Weekly Statistical Sugar Trade Journal.

1/ Includes Puerto Rico and Hawaii. Does not include Philippine Islands. Includes Virgin Islands in 1916-17 and subsequent years.

2/ Crop restricted under international agreement.

3/ Not including Virgin Islands in 1915-16 and prior years.

4/ Including Virgin Islands in 1915-16 and prior years.

Table 8c. - Raw cane sugar: ncluding Hawaiian Islands;

Crop year	Mainland cane sugar production: Louisiana	Fl	lippine slands	U.S. mainland and insular areas in Western Hemisphere countries including Philippine Islands
1932-33	198,892:	3	1,145,341	3,026,294
1931-32	139,834:	2	982,776	2,949,382
1930-31	164,012:	2	782,322	2,564,637
1929-30	178,223:		773,674	2,556,834
1928-29	117,905:		740,987	2,237,266
1927-28	63,207:		622,704	2,174,484
1926-27	42,112:		584,238	1,920,509
5-year average	113,092:		700,785	2,290,746
1925-26	124,447:		436,705	1,813,651
1924-25	79,002:		581,064	1,949,830
1923-24	144,664:		372,332	1,548,072
1922-23	263,478:		263,437	1,349,448
1921-22	289,669:		338,160	1,500,385
5-year average	180,252:		398,340	1,632,278
1920-21	150,996:		255,843	1,360,144
1919-20	108,035:		209,336	1,274,065
1918-19	250,802:		195,289	1,358,075
1917-18	217,499:		216,260	1,367,499
1916-17	271,339:		202,655	1,516,763
5-year average	199,734:		215,877	1,375,310
1915-16	122,768:		332,158	1,417,156
1914-15	216,696:		207,679	1,313,145
1913-14	261,337:		232,761	1,377,044
1912-13	137,119:		155,201	1,143,928
1911-12	315,066:		190,702	1,411,536
5-year average	210,597:		223,700	1,332,562
1910-11	306,000:		203,784	1,321,880
1909-10	325,000:		116,114	1,221,727
1908-09	355,000:		123,208	1,223,902
1907-08	340,000:		141,213	1,158,501
1906-07	230,000:		121,977	967,848
5-year average	311,200:		141,259	1,178,772
1905-06	330,000:		145,525	1,083,750
1904-05	335,000:		106,875	982,451
1903-04	215,000:		84,000	776,903
1902-03	329,226:		90,000	895,288
1901-02	321,676:		78,637	802,822
5-year average	306,180:		101,008	908,243

Source: Based on estimates published

1/ Production for Virgin Islands for

Table 8c. - Raw cane sugar: Detailed analysis of production in United States mainland and insular areas in Western Hemisphere (including Hawaiian Islands; crop years 1901-02 to 1932-33, inclusive

(In long tons)

Crop year	Mainland United States				United States insular areas in Western Hemisphere				Total United States cane sugar production		
	Louisiana	Florida	Texas	Total U.S. mainland	Puerto Rico	Hawaiian Islands	Virgin Islands	Total U.S. insular	U.S. mainland and insular areas in Western Hemisphere	Philippine Islands	U.S. mainland and insular areas in Western Hemisphere countries including Philippine Islands
1932-33	198,892	32,143	-	231,035	744,918	900,000	5,000	1,649,918	1,880,953	1,145,341	3,026,294
1931-32	139,834	21,094	-	160,928	886,098	915,493	4,087	1,805,678	1,966,606	982,776	2,949,382
1930-31	164,012	23,571	-	187,583	703,388	889,544	1,800	1,594,732	1,782,315	782,322	2,564,637
1929-30	178,223	-	-	178,223	773,310	825,891	5,736	1,604,937	1,783,160	773,674	2,556,834
1928-29	117,905	-	-	117,905	530,116	844,462	3,796	1,378,374	1,496,279	740,987	2,237,266
1927-28	63,207	-	-	63,207	670,831	807,180	10,562	1,488,573	1,551,780	622,704	2,174,484
1926-27	42,112	-	-	42,112	568,679	724,403	7,077	1,294,159	1,336,271	584,238	1,920,509
5-year average	113,092	4,714		117,806	648,065	818,296	5,794	1,472,155	1,589,961	700,785	2,290,746
1925-26	124,447	-	-	124,447	541,485	705,350	5,634	1,252,439	1,376,946	436,705	1,813,651
1924-25	79,002	-	-	79,002	589,760	691,804	7,200	1,289,764	1,368,766	581,064	1,949,830
1923-24	144,664	-	2,500	147,154	399,975	626,279	2,532	1,028,586	1,175,750	372,332	1,548,072
1922-23	263,478	-	2,875	266,353	338,456	479,463	1,739	819,658	1,086,011	263,437	1,349,448
1921-22	289,669	-	2,920	292,589	362,442	502,194	5,000	869,636	1,162,225	338,160	1,500,385
5-year average	180,252	-	1,659	181,911	446,424	601,218	4,387	1,052,029	1,233,940	398,540	1,632,278
1920-21	150,996	-	6,238	157,234	438,494	504,073	4,500	947,067	1,104,301	255,843	1,360,144
1919-20	108,035	-	2,000	110,035	433,825	508,469	12,400	954,694	1,064,729	209,336	1,274,065
1918-19	250,802	-	3,125	253,927	362,618	537,241	9,000	908,859	1,162,786	195,289	1,358,075
1917-18	217,499	-	2,009	219,508	413,958	512,373	5,400	931,731	1,151,239	216,260	1,367,499
1916-17	271,339	-	6,250	277,589	448,567	580,165	7,787	1,036,519	1,314,108	202,655	1,516,763
5-year average	199,734	-	3,925	203,659	419,493	528,464	7,817	955,774	1,159,433	215,877	1,375,310
1915-16	122,768	-	1,000	123,768	431,335	529,895	1/	1/961,230	1,084,998	332,158	1,417,156
1914-15	216,696	-	3,406	220,102	308,178	577,186	-	885,364	1,105,466	207,679	1,313,145
1913-14	261,337	-	7,000	268,337	325,021	550,925	-	875,946	1,144,283	232,761	1,377,044
1912-13	137,119	-	8,036	145,155	355,359	488,213	-	843,572	988,727	155,201	1,143,928
1911-12	315,066	-	7,145	322,209	367,145	531,480	-	898,625	1,220,834	190,702	1,411,536
5-year average	210,597	-	5,317	215,914	357,408	535,540	-	892,948	1,108,882	223,700	1,332,562
1910-11	306,000	-	11,000	317,000	295,000	506,096	-	801,096	1,118,096	203,784	1,321,880
1909-10	325,000	-	10,000	335,000	308,000	462,613	-	770,613	1,105,613	116,114	1,221,727
1908-09	355,000	-	15,000	370,000	252,877	477,817	-	730,694	1,100,694	123,208	1,223,902
1907-08	340,000	-	12,000	352,000	200,000	465,288	-	665,288	1,017,288	141,213	1,158,501
1906-07	230,000	-	13,000	243,000	210,000	392,871	-	602,871	845,871	121,977	967,848
5-year average	311,200		12,200	323,400	253,175	460,937		714,112	1,037,512	141,259	1,178,772
1905-06	330,000	-	12,000	342,000	213,000	383,225	-	596,225	938,225	145,525	1,083,750
1904-05	335,000	-	15,000	350,000	145,000	380,576	-	525,576	875,576	106,875	982,451
1903-04	215,000	-	19,800	234,800	130,000	328,103	-	458,103	692,903	84,000	776,903
1902-03	329,226	-	-	329,226	85,000	391,062	-	476,062	805,288	90,000	895,288
1901-02	321,676	-	-	321,676	85,000	317,509	-	402,509	724,185	78,637	802,822
5-year average	306,180	-	9,360	315,540	131,600	360,095		491,695	807,235	101,008	908,243

Source: Based on estimates published in Willett and Gray's Weekly Statistical Sugar Trade Journal.

1/ Production for Virgin Islands for year 1915-16 and earlier years is included in totals for West Indies in Table 8d .

-C2 32-33, inclusive

Crop year	Other West Indies: Santo Domingo	Other West Indies: Haiti	Total West Indies: All islands without Cuba: Puerto Rico, and Virgin Islands 1/	Total West Indies: All islands with Cuba: Puerto Rico, and Virgin Islands
	420,000	25,302	856,925	3,601,922
1932-33	427,621	20,947	813,000	4,306,049
1931-32				
	362,711	18,811	679,247	4,506,621
1930-31	360,259	18,907	699,938	6,150,244
1929-30	354,085	12,497	653,259	6,343,486
1928-29	368,196	16,367	702,184	5,395,294
1927-28	303,524	12,563	606,766	5,681,238
1926-27	349,755	15,829	668,279	5,615,377
5-year av	354,720	10,044	661,384	6,093,191
1925-26	311,270	8,280	608,437	6,331,367
1924-25	229,373	5,800	432,863	4,901,812
1923-24	184,171	10,967	401,933	4,345,038
1922-23	157,143	12,283	373,995	4,737,824
1921-22	247,335	9,475	495,722	5,281,846
5-year av	185,546	5,625	383,127	4,762,161
1920-21	175,736	4,125	412,602	4,588,904
1919-20	158,309	3,300	395,683	4,739,077
1918-19	127,322	None	358,371	4,223,812
1917-18	130,171	None	395,452	3,875,526
1916-17	155,417	2,610	389,047	4,437,896
5-year av	126,058	None	1/ 391,318	3,830,568
1915-16	108,267	None	328,484	3,229,329
1914-15	105,778	None	314,133	3,236,886
1913-14	84,661	None	255,171	3,039,067
1912-13	96,046	None	297,736	2,560,865
1911-12	104,162	None	317,368	3,179,343
5-year av	89,979		292,204	2,070,655
1910-11	93,003		314,287	2,426,636
1909-10	69,483		242,550	2,009,009
1908-09	62,235		261,674	1,423,632
1907-08	60,000		275,257	1,902,930
1906-07	74,940		277,194	1,966,572
5-year av	55,090		309,376	1,701,125
1905-06	47,309		245,146	1,553,404
1904-05	47,000		273,306	1,443,534
1903-04	50,000		260,163	1,344,041
1902-03	45,000		282,410	1,217,591
1901-02	48,880		274,080	1,451,939

5-year av

Sour

1/

Table 8d. - Raw cane sugar: Detailed analysis of production in West Indies, by islands, for crop years 1901-02 to 1932-33, inclusive

(In long tons)

Crop year	Cuba	United States Islands: Puerto Rico	United States Islands: Virgin Islands	United States Islands: Total U. S. islands	British islands: Trinidad	British islands: Barbados	British islands: Jamaica	British islands: Antigua	British islands: St. Kitts	British islands: Other British West Indies	British islands: Total British West Indies	French islands: Martinique	French islands: Guadeloupe	French islands: Total French West Indies	Other West Indies: Santo Domingo	Other West Indies: Haiti	Total West Indies: All islands without Cuba: Puerto Rico, and Virgin Islands 1/	Total West Indies: All islands with Cuba: Puerto Rico, and Virgin Islands
1932-33	1,995,079	744,918	5,000	749,918	120,763	96,021	56,000	24,175	24,166	7,526	328,651	46,835	36,137	82,972	420,000	25,302	856,925	3,601,922
1931-32	2,602,864	886,098	4,087	890,185	97,564	82,834	58,506	19,230	19,969	6,170	284,273	45,160	34,999	80,159	427,621	20,947	813,000	4,306,049
1930-31	3,122,186	703,388	1,800	705,188	98,573	59,545	50,156	5,202	14,970	7,353	235,799	37,526	24,400	61,926	362,711	18,811	679,247	4,506,621
1929-30	4,671,260	773,310	5,736	779,046	79,848	65,517	67,847	18,550	18,701	5,861	256,324	37,534	26,914	64,448	360,259	18,907	699,938	6,150,244
1928-29	5,156,315	530,116	3,796	533,912	89,926	66,275	58,450	10,945	13,724	7,494	246,814	37,550	2,313	39,863	354,085	12,497	653,259	6,343,486
1927-28	4,011,717	670,831	10,562	681,393	81,551	53,106	63,214	19,811	19,443	6,141	243,266	41,879	32,476	74,355	368,196	16,367	702,184	5,395,294
1926-27	4,504,716	562,679	7,077	569,756	51,982	58,685	62,138	23,501	18,068	4,969	219,343	45,039	26,297	71,336	363,624	12,563	606,766	5,681,238
5-year average	4,293,239	648,065	5,794	653,859	80,376	60,626	60,3	15,622	16,981	6,363	240,309	39,906	22,,80	62,386	349,755	15,829	668,279	5,615,377
1925-26	4,884,658	541,485	5,664	547,149	73,561	47,535	57,675	12,800	16,380	7,550	215,501	48,121	32,998	81,119	354,720	10,044	661,324	6,093,191
1924-25	5,125,570	589,760	7,200	596,960	69,628	49,315	42,843	17,300	15,563	6,253	200,902	47,995	39,990	87,985	311,270	8,280	608,437	6,331,367
1923-24	4,066,642	399,975	2,332	402,307	52,045	44,109	34,334::	7,860	10,196	4,483	153,032	17,110	27,548	44,658	289,373	5,800	432,863	4,901,812
1922-23	3,602,910	338,456	1,739	340,195	41,619	52,715	39,049	12,642	10,735	5,292	162,052	19,700	25,043	44,743	184,171	10,967	401,933	4,345,038
1921-22	3,226,387	362,442	5,000	367,442	59,948	36,742	42,167	9,850	8,426	9,238	166,371	18,329	19,869	38,198	157,143	12,283	373,995	4,747,824
5-year average	4,339,313	446,424	4,387	450,811	59,360	46,083	43,214	12,091	12,260	6,564	179,572	30,251	29,090	59,341	247,335	9,475	495,722	5,284,846
1920-21	3,936,040	438,494	4,500	442,994	54,933	24,817	39,960	11,320	8,063	3,603	142,696	23,834	25,426	49,260	185,546	5,645	383,147	4,762,161
1919-20	3,730,077	433,825	12,400	446,225	58,416	54,279	46,875	15,540	10,036	5,651	190,797	19,097	22,847	41,944	175,736	4,125	412,602	4,588,904
1918-19	3,971,776	362,618	9,000	371,618	47,850	75,271	43,000	12,841	10,901	7,580	197,443	10,027	26,604	36,631	158,309	3,360	395,683	4,739,077
1917-18	3,446,083	413,958	5,400	419,358	45,256	65,230	34,300	9,4[illegible]	8,846	16,745	179,786	20,881	30,382	51,263	127,322	None	358,371	4,223,812
1916-17	3,023,720	448,567	7,787	456,354	70,891	55,456	28,331	17,048	15,048	7,906	194,678	34,443	36,160	70,603	130,171	None	395,452	3,875,526
5-year average	3,621,539	419,498	7,817	427,310	55,469	55,011	38,493	13,231	10,579	8,297	181,080	21,656	28,284	49,940	155,417	2,610	389,047	4,477,806
1915-16	3,007,915	431,335	1/	431,335	64,231	58,035	15,143	18,542	16,106	5,417	177,474	38,225	34,111	73,036	126,068	None 1/	391,518	3,830,568
1914-15	2,592,667	308,178	1/	308,178	58,882	32,578	15,063	11,320	12,680	6,543	137,066	39,034	39,617	78,651	108,267	None	348,484	3,299,329
1913-14	2,997,732	325,021	1/	325,021	55,488	33,387	15,583	15,345	8,655	7,799	136,257	40,138	26,160	66,298	105,778	None	314,133	3,236,886
1912-13	2,428,537	355,359	1/	355,359	42,331	11,479	8,728	7,415	10,685	5,900	86,538	39,159	37,814	77,273	84,661	None	255,171	3,039,067
1911-12	1,895,984	367,145	1/	367,145	40,136	30,548	21,836	6,236	14,727	8,038	122,319	35,473	36,824	72,297	96,046	None	297,736	2,560,865
5-year average	2,504,567	357,408	1/	357,408	52,374	33,205	15,270	11,771	12,571	6,740	131,931	38,606	34,905	73,511	104,162	None	317,608	3,179,343
1910-11	1,483,451	295,000	1/	295,000	37,282	32,514	19,414	18,000		5,577	112,787	35,438	39,000	74,438	89,979		276,704	2,070,666
1909-10	1,804,349	308,000	1/	308,000	44,139	36,389	12,000	20,000		5,806	118,334	39,950	48,000	87,950	93,003		314,287	2,496,636
1908-09	1,513,582	252,877	1/	252,877	44,512	13,381	11,453	20,753		6,000	96,099	37,757	25,211	62,968	69,483		242,550	1,969,009
1907-08	961,958	200,000	1/	200,000	41,626	31,852	10,718	23,600		5,200	112,996	35,943	37,500	73,443	62,235		261,674	1,423,632
1906-07	1,427,473	210,000	1/	210,000	45,651	32,950	13,971	28,319		5,662	126,533	36,764	38,960	75,724	66,000		275,257	1,902,930
5-year average	1,438,603	253,175	1/	253,175	42,638	29,417	13,511	22,135		5,649	113,350	37,171	37,734	74,905	74,940		274,894	1,966,572
1905-06	1,178,749	213,000	1/	213,000	56,455	49,864	12,523	24,000		13,000	155,842	42,231	43,213	85,444	55,090		309,376	1,701,125
1904-05	1,163,258	145,000	1/	145,000	31,000	41,600	11,251	24,000		13,000	120,851	29,986	36,000	65,986	47,209		245,146	1,563,404
1903-04	998,878	85,000	1/	85,000	42,679	38,179	18,772	18,000		12,000	153,394	23,936	35,976	59,912	47,000		273,306	1,443,534
1901-02	850,181	85,000	1/	85,000	52,673	46,808	14,529	21,800		13,200	141,710	32,026	38,865	70,891	48,860		274,680	1,451,939
5-year average	1,046,259	131,600	1/	131,600	45,373	46,315	15,843	19,000		15,000	148,831	34,942	40,637	75,579	45,000		282,410	1,217,591

Source: Based on estimates published in Willett & Gray's Weekly Statistical Sugar Trade Journal.

1/ Production for Virgin Islands included in years prior to 1916-17 as follows:

1915-16	14,750	long tons
1914-15	7,500	" "
1913-14	5,800	" "
1912-13	6,699	" "
1911-12	7,074	" "
5-year average	7,765	" "
1910-11	15,000	" "
1909-10	15,000	" "
1908-09	14,000	" "
1907-08	15,000	" "
1906-07	13,000	" "
5-year average	14,000	" "
1905-06	13,000	" "
1904-05	11,000	" "
1903-04	13,000	" "
1902-03	13,000	" "
1901-02	13,000	" "
5-year average	12,500	" "

T, inclusive

Crop year	Dema (Bri Guia	Total West coast of So. America	Total South America
1932-33	13,287	441,287	1,914,841
1931-32	14,895	419,327	1,963,715
1930-31	12,077	505,800	1,972,006
1929-30	12,356	441,552	1,948,580
1928-29	11,745	384,145	1,872,396
1927-28	11,724	390,815	1,795,002
1926-27	9,263	396,284	1,856,868
5-year average	11,273	421,719	1,886,970
1925-26	10,857	299,833	1,513,463
1924-25	9,522	329,222	1,512,776
1923-24	9,904	330,566	1,511,580
1922-23	10,454	334,674	1,435,433
1921-22	11,321	332,639	1,162,035
5-year average	10,412	325,387	1,427,058
1920-21	8,010	276,008	938,681
1919-20	8,688	321,316	1,188,187
1918-19	10,023	294,992	747,457
1917-18	10,480	295,480	763,698
1916-17	11,384	251,509	723,207
5-year average	10,117	287,861	872,246
1915-16	11,190	283,757	759,297
1914-15	11,841	269,948	936,282
1913-14	10,054	232,504	795,005
1912-13	8,954	190,734	579,504
1911-12	8,754	197,754	711,295
5-year average	10,159	234,940	776,257
1910-11	10,786	143,786	685,997
1909-10	10,000	138,000	631,572
1908-09	11,000	150,000	691,593
1907-08	9,336	135,336	539,518
1906-07	12,156	161,156	628,777
5-year average	10,656	145,656	635,372
1905-06	12,000	150,000	700,036
1904-05	10,000	150,000	590,382
1903-04	11,957	131,957	601,134
1902-03	12,906	123,906	579,022
1901-02	12,000	138,000	761,805
5-year average	11,656	138,773	646,476

Source: Based on estimates pu

1/ Restricted under internatio

Table 8e. - Raw cane sugar: Production of South American countries, crop years 1901-02 to 1932-33, inclusive

(In long tons)

Crop year	Demarara (British Guiana)	Surinam (Dutch Guiana)	Argentine	Brazil	Venezuela	Total East coast of So. America	Ecuador	Peru	Total West coast of So. America	Total South America
1932-33	135,000	17,000	348,230	950,000	23,324	1,473,554	20,000	1/ 421,287	441,287	1,914,841
1931-32	148,504	14,000	346,470	1,015,227	20,187	1,544,388	23,432	1/ 395,395	419,327	1,963,715
1930-31	126,143	16,500	381,792	922,129	19,642	1,466,206	20,723	485,077	505,800	1,972,006
1929-30	127,764	12,561	340,479	1,003,903	22,321	1,507,028	19,196	422,356	441,552	1,948,580
1928-29	117,255	15,178	375,329	960,846	19,643	1,488,251	22,400	361,745	384,145	1,872,396
1927-28	116,240	13,500	421,601	832,931	19,915	1,404,187	20,091	370,724	390,815	1,795,002
1926-27	97,425	16,669	475,695	850,565	20,230	1,460,584	20,721	375,063	395,784	1,856,368
5-year average	116,965	14,882	393,977	914,075	20,250	1,460,231	20,946	411,477	432,423	1,892,654
1925-26	107,580	12,472	395,733	676,524	21,321	1,213,630	18,976	284,857	303,833	1,517,463
1924-25	90,874	10,200	249,362	812,493	20,625	1,183,554	18,700	310,522	329,222	1,512,776
1923-24	95,494	10,682	257,419	799,931	17,488	1,181,014	13,662	316,904	330,566	1,511,580
1922-23	101,128	11,719	209,718	761,354	16,840	1,100,759	14,220	320,454	334,674	1,435,433
1921-22	110,985	10,000	197,115	491,933	19,263	829,396	13,318	319,321	332,639	1,162,035
5-year average	101,212	11,015	261,870	708,447	19,227	1,101,071	15,775	310,412	326,187	1,427,258
1920-21	87,186	9,394	203,224	340,063	22,806	662,673	6,398	269,010	276,008	938,681
1919-20	86,971	7,169	298,709	455,522	18,500	866,871	7,628	313,688	321,316	1,188,187
1918-19	107,560	14,590	130,266	183,079	16,970	452,465	7,964	286,028	294,992	747,457
1917-18	108,181	9,739	87,699	251,848	10,751	468,218	8,000	287,480	295,480	763,698
1916-17	114,292	11,210	84,069	242,699	18,428	471,698	3,125	216,284	251,509	723,207
5-year average	100,838	10,420	160,793	254,642	17,491	592,385	6,743	274,498	287,861	880,246
1915-16	119,091	8,249	149,299	189,754	9,047	475,440	7,567	276,750	284,757	759,197
1914-15	116,622	13,457	335,956	196,244	4,055	666,334	7,107	262,841	269,948	936,282
1913-14	106,211	14,000	280,319	158,038	3,933	562,501	4,450	228,054	232,504	795,005
1912-13	83,922	9,584	147,278	146,830	1,186	388,770	6,780	183,954	190,734	579,504
1911-12	83,294	14,459	180,092	234,600	896	513,341	5,000	192,754	197,754	711,095
5-year average	101,828	11,350	218,789	185,133	3,623	520,677	6,181	228,070	234,540	755,217
1910-11	108,297	14,459	178,355	287,000	3,000	591,111	-	173,786	173,786	664,897
1909-10	101,843	12,055	123,674	253,000	3,000	493,572	-	138,000	138,000	631,472
1908-09	117,176	10,938	162,479	248,000	3,000	541,593	-	150,000	150,000	691,593
1907-08	99,737	12,000	109,445	180,000	3,000	404,182	-	135,336	135,336	539,518
1906-07	120,334	13,000	116,287	215,000	3,000	467,621	-	161,156	161,156	628,777
5-year average	109,473	12,490	138,148	237,600	3,000	499,616	-	151,656	151,656	651,272
1905-06	121,693	13,000	137,343	275,000	3,000	550,036	-	150,000	150,000	700,036
1904-05	101,278	13,000	128,104	195,000	3,000	440,382	-	150,000	150,000	590,382
1903-04	113,282	13,000	142,895	197,000	3,000	469,177	-	131,957	131,957	601,134
1902-03	121,570	13,046	130,000	187,500	3,000	455,116	-	123,906	123,906	579,022
1901-02	123,967	12,750	135,000	349,088	3,000	623,805	-	138,000	138,000	761,805
5-year average	116,358	12,959	134,668	240,718	3,000	507,703	-	141,656	138,773	646,476

Source: Based on estimates published in Willett & Gray's Weekly Statistical Sugar Trade Journal.

1/ Restricted under international agreement.

Eastern Hemisphere

	guese bique	Total Africa	Oceania: British areas: Australia	Fiji Islands	Total	Total cane sugar production in Eastern Hemisphere
193	000	880,249	532,618	135,241	667,859	9,541,278
193	623	746,816	605,212	79,725	684,937	10,127,209
193	269	818,419	538,641	92,857	631,498	9,200,547
192	644	732,635	532,591	87,680	620,271	8,748,025
192	780	748,468	534,383	98,683	633,066	8,667,642
192	250	656,360	493,049	95,114	588,163	8,725,875
192	870	600,997	415,611	69,071	484,682	7,814,769
192	983	711,376	502,855	88,681	591,536	8,631,372
5-y						
192	841	668,514	522,344	100,810	623,154	7,322,051
192	278	545,260	435,680	63,898	499,578	7,01[illegible],362
192	400	572,022	281,859	35,544	317,403	6,807,136
192	950	556,853	306,678	71,731	378,409	6,409,292
192	446	528,781	299,465	72,624	372,089	5,841,911
	183	574,286	369,205	68,921	438,126	6,679,150
5-y						
192	706	562,648	167,401	72,965	240,366	5,423,014
191	759	500,041	162,298	72,965	226,646	5,691,273
191	944	531,005	209,853	64,348	274,201	5,542,199
191	615	469,454	324,260	63,009	387,269	6,566,985
191	473	498,910	192,831	95,900	288,731	5,794,134
	299	528,572	211,329	73,845	283,446	5,803,521
5-y						
191	618	486,561	159,681	119,900	279,581	5,272,448
191	600	531,578	246,408	96,900	343,308	5,068,932
191	948	480,956	266,267	92,112	358,379	4,800,439
191	742	446,167	129,783	94,710	224,493	4,866,972
191	500	388,953	190,595	61,728	252,323	4,877,157
	482	466,843	198,547	93,070	291,617	4,977,190
5-y						
191	700	416,321	229,584	69,000	298,584	4,661,482
190	330	419,771	149,334	68,900	218,234	4,307,137
190		311,784	166,098	65,000	231,098	3,924,544
190		286,870	211,725	69,000	280,725	3,994,682
190		326,825	206,000	43,000	249,000	4,012,496
	606	352,315	192,548	62,980	255,528	4,130,069
5-y						
190		322,761	190,000	40,000	230,000	3,478,734
190		232,101	169,213	47,000	216,213	1,593,614
190		321,706	113,328	50,000	163,328	1,497,595
190		277,473	97,626	35,500	133,126	1,386,411
190		278,926	138,858	31,000	169,858	1,337,551
		286,593	141,805	40,700	182,505	1,858,731
5-y						

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Table 8f. - Cane sugar: Production in specified countries or areas of each of the different continents in the Eastern Hemisphere
Crop years 1901-02 to 1932-33, inclusive
(In long tons)

Crop year	Europe (cane)		Asia					Africa								Oceania			Total cane sugar production in Eastern Hemisphere
									British			French	Portuguese			British areas			
	Spain	Total	India (British)	Java (Dutch)	Formosa and Japan	Philippine Islands	Total Asia 1/	Egypt	Mauritius	Natal	Total British	Reunion	Mozambique	Total Africa		Australia	Fiji Islands	Total	
1932-33	24,000	24,000	4,651,000	2/1,374,254	798,575	1,145,341	7,969,170	125,000	247,029	358,908	605,937	54,312	95,000	880,249		532,618	135,241	667,859	9,541,278
1931-32	25,740	25,740	3,970,000	2/2,569,390	1,147,550	982,776	8,669,716	144,362	163,210	325,700	488,910	42,921	70,623	746,816		605,212	79,725	684,937	10,127,209
1930-31	22,687	22,687	3,218,000	2,798,870	928,751	782,322	7,727,943	119,874	220,960	350,901	571,861	50,415	76,269	818,419		538,641	92,857	631,498	9,200,547
1929-30	13,562	13,562	2,761,000	2,923,010	923,873	773,674	7,381,557	98,303	238,030	266,638	504,668	51,020	78,644	732,635		532,591	87,680	620,271	8,748,025
1928-29	11,610	11,610	2,735,000	2,894,879	903,632	746,587	7,274,498	108,952	247,752	264,285	512,037	37,699	89,780	748,468		534,383	98,683	633,066	8,667,642
1927-28	10,552	10,552	3,216,000	2,939,164	692,932	622,704	7,470,800	89,941	215,555	219,642	435,197	49,972	81,250	656,360		493,049	95,114	588,163	8,725,875
1926-27	6,719	6,719	3,255,000	2,360,079	522,054	584,238	6,722,371	71,353	122,590	216,305	408,855	56,579	63,970	600,997		415,611	69,071	484,682	7,314,769
5-year average	13,026	13,026	3,037,000	2,787,200	794,447	766,765	7,316,434	97,725	222,977	263,554	466,531	43,137	77,963	711,376		502,655	86,681	591,536	8,631,372
1925-26	8,704	8,704	1,977,000	1,991,390	616,184	436,705	6,071,674	97,286	241,220	214,152	455,372	59,015	59,841	668,514		522,344	100,810	623,154	7,322,051
1924-25	8,087	8,087	2,548,000	2,278,900	594,473	561,064	5,969,437	79,918	224,710	143,974	368,684	52,380	44,278	545,260		435,680	63,898	499,578	7,014,362
1923-24	7,871	7,871	3,317,000	3/1,771,772	448,736	372,332	5,909,840	88,382	201,550	181,558	383,108	44,132	56,400	572,022		281,859	35,744	317,403	6,807,136
1922-23	13,918	13,918	3,044,000	1,746,875	405,800	263,437	5,460,112	94,554	231,190	142,287	373,477	42,872	45,950	556,853		306,678	71,731	378,409	6,409,292
1921-22	13,805	13,805	2,532,500	1,649,610	406,966	338,160	4,827,236	106,963	197,420	132,388	329,808	55,564	34,446	528,781		299,465	72,624	372,089	5,641,911
5-year average	10,477	10,477	2,883,700	3/1,867,709	486,512	398,340	5,696,261	93,221	219,218	162,872	382,090	50,792	48,183	574,286		369,805	68,921	438,126	6,679,150
1920-21	6,886	6,886	2,506,320	1,506,755	342,176	255,843	4,613,694	79,706	259,072	128,285	387,157	42,079	52,706	562,648		167,401	72,905	240,306	5,423,014
1919-20	6,045	6,045	3,049,157	1,335,763	265,482	209,336	4,877,734	56,712	235,490	168,913	404,403	49,968	39,758	560,641		162,298	72,905	226,646	5,691,273
1918-19	6,618	6,618	2,370,000	1,749,408	415,678	195,289	4,730,375	75,899	252,770	134,119	386,889	33,273	34,944	531,005		209,853	64,348	274,201	5,542,199
1917-18	7,039	7,039	3,311,000	1,778,345	397,618	216,260	5,703,223	73,488	225,466	93,679	319,145	50,206	20,615	469,454		324,260	63,009	387,269	6,566,985
1916-17	4,584	4,584	2,728,000	1,596,174	475,080	202,655	5,001,909	101,832	209,035	102,418	311,453	42,152	43,473	498,910		192,831	95,900	288,731	5,794,134
5-year average	6,235	6,235	2,792,895	1,593,689	382,807	215,877	4,985,268	84,727	236,527	125,483	362,010	43,536	38,292	528,572		211,329	73,845	285,446	5,803,521
1915-16	4,264	4,264	2,636,875	1,198,567	334,742	332,158	4,502,042	98,964	214,518	101,212	315,730	35,249	36,618	486,561		159,681	119,900	279,581	5,272,448
1914-15	5,595	5,595	2,460,573	1,303,045	217,154	207,679	4,188,451	75,738	277,360	102,613	379,973	39,267	36,600	531,578		246,408	96,900	343,308	5,068,932
1913-14	7,376	7,376	2,291,500	1,272,417	157,050	232,761	3,953,720	69,368	249,705	92,153	341,858	35,782	33,946	480,956		266,267	92,112	358,379	4,800,439
1912-13	13,231	13,231	2,583,600	1,331,180	113,100	155,201	4,183,081	75,420	213,059	91,378	304,437	38,568	27,742	446,167		129,783	94,710	224,493	4,866,972
1911-12	16,176	16,176	2,451,100	1,395,000	182,903	190,702	4,219,705	57,879	169,550	92,000	261,550	42,024	27,500	388,953		190,595	61,728	252,323	4,877,157
5-year average	9,328	9,328	2,484,730	1,300,042	209,930	223,760	4,202,402	75,474	224,838	95,871	320,709	38,178	32,482	486,843		198,547	93,070	291,617	4,977,190
1910-11	20,293	20,293	2,226,400	1,229,100	267,000	203,784	3,926,284	49,394	226,099	82,000	308,099	43,128	15,700	416,321		229,584	69,000	298,584	4,661,482
1909-10	20,300	20,300	2,127,100	1,200,618	205,000	116,114	3,648,832	52,525	244,597	66,000	310,597	39,319	17,330	419,771		149,334	68,900	218,234	4,307,137
1908-09	21,669	21,669	1,872,900	1,241,885	122,000	123,208	3,359,993	34,835	205,758	31,992	237,750	39,199	-	311,784		166,098	65,000	231,098	3,924,544
1907-08	14,047	14,047	2,046,900	1,156,477	68,450	141,213	3,413,040	55,648	170,000	24,222	194,222	37,000	-	286,870		211,725	69,000	280,725	3,994,682
1906-07	16,400	16,400	2,205,300	1,011,546	81,448	121,977	3,420,271	42,195	220,000	27,130	247,130	37,500	-	326,825		206,000	43,000	249,000	4,012,496
5-year average	18,542	18,542	2,095,720	1,167,925	148,700	141,257	3,553,684	46,919	213,291	46,269	259,560	39,230	6,606	352,315		192,548	62,980	255,528	4,180,069
1905-06	15,722	15,722	4/1,725,500	990,994	48,232	145,525	2,910,251	62,505	188,364	33,892	222,256	38,000	-	322,761		190,000	40,000	230,000	3,478,734
1904-05	18,592	18,592	5/ 10,933	1,008,900	-	106,875	1,126,708	60,000	142,101	-	142,101	30,000	-	232,101		169,213	47,000	216,213	1,593,614
1903-04	28,000	28,000	5/ 15,000	885,561	-	84,000	984,561	60,000	220,589	-	220,589	41,117	-	321,706		113,328	50,000	163,328	1,497,595
1902-03	28,000	28,000	5/ 15,000	842,812	-	90,000	947,812	87,500	150,349	-	150,349	39,624	-	277,473		97,626	35,500	133,126	1,386,411
1901-02	28,000	28,000	5/ 15,000	767,130	-	78,637	860,767	98,000	147,828	-	147,828	33,098	-	278,926		138,558	31,000	169,558	1,237,551
5-year average	23,663	23,663	356,267	899,000	9,646	101,007	1,366,020	73,601	169,846	6,779	176,625	36,367	-	286,593		141,805	40,700	182,505	1,850,781

Source: Based on estimates published in Willett & Gray's Weekly Statistical Sugar Trade Journal.

1/ No figures are available to show production of China, Siam and some other countries whose production is practically all consumed within the country where grown.
2/ Restricted under international agreement.
3/ A Javan sugar crop covers the calendar year in which the crop is harvested; part of the year before (when it is planted); and part of the year succeeding (when a substantial part of the crop is marketed). Formerly (in 1923-24 and years prior thereto shown in the table) the earlier year of the hyphenated crop year given in the table, is the year of harvesting and the later one is the year in which a substantial part of the crop so harvested was marketed. Beginning in 1924-25, and covering all subsequent years shown in the table, the earlier year in the hyphenated crop year is the year of planting, and the later one is the year of harvesting. This leaves the crop planted in 1922, harvested in 1923, and marketed largely in 1924, to be accounted for. This crop is given as 1,977,490 long tons, or 2,214,788 short tons. Under the revised method of reporting the Javan crop, now used, this tonnage (2,214,788) would appear as an adjusted figure for the production of the crop year 1923-24; the figure which appears in the table for 1923-24 (1,984,384 short tons) would be shown as the production of 1922-23. Likewise, the figures appearing in the table for each of the crop years prior to 1922-23, would be shown as the production of the crop year immediately preceding that for which it appears in the table.
4/ Crops produced.
5/ Exports.

Table 8g- Beet sugar: Summary of world production by continents for crop years from 1901-02 to 1932-33, inclusive

(In long tons)

Crop year	North America 1/			Europe	Total
	United States	Canada	Total North America	Total All countries 2/	World production beet sugar
1932-33	1,206,656	57,279	1,263,935	6,518,783	7,782,718
1931-32	1,025,217	48,254	1,073,471	7,436,241	8,509,712
1930-31	1,075,688	40,953	1,116,641	10,209,882	11,326,523
1929-30	901,713	27,869	929,582	8,227,197	9,156,779
1928-29	938,640	28,857	967,497	8,463,309	9,430,806
1927-28	965,241	27,212	992,453	8,031,874	9,024,327
1926-27	801,246	31,422	832,668	6,871,892	7,704,560
5-year average	936,506	31,262	967,768	8,360,831	9,328,599
1925-26	804,439	32,475	836,914	7,453,293	8,290,207
1924-25	974,185	36,200	1,010,385	7,083,068	8,093,453
1923-24	787,217	16,500	803,717	5,057,761	5,861,478
1922-23	615,936	12,400	628,336	4,574,325	5,202,661
1921-22	911,190	18,931	930,121	4,009,648	4,939,769
5-year average	818,594	23,301	841,895	5,635,619	6,477,514
1920-21	969,419	34,600	1,004,019	3,704,939	4,708,958
1919-20	652,957	16,500	669,457	2,604,341	3,273,798
1918-19	674,892	22,300	697,192	3,185,811	3,883,003
1917-18	682,867	11,250	694,117	4,321,145	5,015,262
1916-17	734,577	12,500	747,077	5,025,787	5,772,864
5-year average	742,942	19,430	762,372	3,738,405	4,527,893
1915-16	779,756	17,641	797,397	5,456,621	6,254,018
1914-15	646,257	13,979	660,236	7,646,542	8,306,778
1913-14	655,298	11,675	666,973	7,967,969	8,634,942
1912-13	624,064	11,951	636,015	8,282,623	8,918,638
1911-12	541,101	9,522	550,623	6,338,638	6,889,261
5-year average	649,295	12,954	662,249	7,138,479	7,800,727
1910-11	455,220	-	455,220	8,105,126	8,560,346
1909-10	450,595	-	450,595	6,136,911	6,587,506
1908-09	384,010	-	384,010	6,543,865	6,927,875
1907-08	440,200	-	440,200	6,562,274	7,002,474
1906-07	433,010	-	433,010	6,710,808	7,143,818
5-year average	432,607	-	432,607	6,811,797	7,244,404
1905-06	283,717	-	283,717	6,932,343	7,216,060
1904-05	209,722	-	209,722	4,708,758	4,918,480
1903-04	208,135	-	208,135	5,881,333	6,089,468
1902-03	195,463	-	195,463	5,561,257	5,756,720
1901-02	163,126	-	163,126	6,750,478	6,913,604
5-year average	212,033	-	212,033	5,966,834	6,178,867

Source: Based on estimates published in Willet and Gray's Weekly Statistical Sugar Trade Journal.

1/ Refined beet sugar.

2/ Includes both raw and refined beet sugar (probably chiefly raw).

	Switzerland	Bulgaria	Roumania	Great Britain and Ireland 1/	Jugo-slavia	Other European countries	Total beet Europe
33:	6,900	29,311	48,710	336,362	85,883	91,441	6,518,783
38:	6,100	28,811	48,544	242,829	90,092	68,092	7,436,241
36:	5,704	58,136	152,030	429,886	98,288	58,635	10,209,882
55:	5,800	41,762	82,230	289,762	131,639	41,503	8,227,197
46:	7,300	29,870	131,774	207,526	128,840	39,387	8,463,309
54:	6,550	42,368	139,522	208,114	77,967	43,959	8,031,874
57:	7,950	31,485	162,821	165,465	78,770	28,468	6,871,892
78:	6,661	40,724	133,675	260,151	103,101	42,390	8,360,831
39:	6,395	38,309	115,907	51,784	61,424	33,041	7,453,293
40:	5,906	39,758	86,256	23,730	132,379	59,528	7,083,068
53:	5,896	26,566	71,826	13,280	43,809	6,491	5,057,761
35:	6,033	16,250	49,872	7,011	36,435	32,717	4,574,325
57:	5,856	12,712	25,761	6,446	25,688	-	4,009,648
67:	6,017	26,719	69,924	20,450	59,947	26,355	5,635,619
22:	3,710	7,837	15,006	1,932	21,546	-	3,704,939
50:	8,550	10,974	4,146	-	14,418	-	2,604,341
09:	10,800	2,441	1,672	-	-	-	3,185,811
95:	8,750	10,472	2,539	-	-	-	4,321,145
54:	8,250	9,022	14,646	-	-	-	5,025,787
26:	8,012	8,149	7,602	386	7,193	-	3,768,405
44:	16,000	11,591	28,402	1,918	-	-	5,456,621
45:	12,350	21,861	30,201	-	-	-	7,646,542
55:	4,625	7,352	34,758	-	-	-	7,967,969
55:	3,000	7,000	34,173	-	-	-	8,282,623
74:	2,950	7,757	36,180	-	-	-	6,338,638
29:	7,785	11,112	32,743	384	-	-	7,138,474

rs as follows:

Table 8h. Beet sugar: Production in European countries, crop years 1901-02 to 1932-33, inclusive

(In long tons)

Crop year	Germany	Czechoslovakia	Austria	Hungary	France	Belgium	Holland	Russia and Ukraine	Poland	Sweden	Denmark	Italy	Spain	Switzerland	Bulgaria	Roumania	Great Britain and Ireland 1/	Jugo-slavia	Other European countries	Total beet Europe
1932-33	1,065,992	627,569	164,905	103,410	1,015,370	264,254	243,008	1,000,000	422,139	235,351	191,770	322,875	263,533	6,900	29,311	48,710	336,362	85,883	91,441	6,518,783
1931-32	1,567,042	801,921	162,568	125,251	870,606	203,845	174,590	1,512,000	499,275	143,611	122,000	367,876	401,188	6,100	28,811	48,544	242,829	90,092	68,092	7,436,241
1930-31	2,528,591	1,125,690	150,269	234,171	1,203,659	283,659	299,523	1,675,700	791,951	186,535	167,800	420,244	339,836	5,704	58,136	152,030	429,886	98,288	58,635	10,209,882
1929-30	1,966,782	1,022,116	120,375	246,496	909,622	252,048	267,824	950,000	928,757	121,404	134,300	440,822	273,955	5,800	41,762	82,230	289,762	131,639	41,503	8,227,197
1928-29	1,851,263	1,055,570	107,322	220,062	904,047	279,290	319,937	1,446,000	756,839	160,860	154,492	391,684	266,246	7,300	29,870	131,774	207,526	128,840	39,387	8,463,309
1927-28	1,665,450	1,253,163	110,020	187,600	863,206	273,113	259,966	1,501,986	566,515	145,335	142,800	284,276	259,964	6,550	42,368	139,522	208,114	77,967	43,959	8,031,874
1926-27	1,657,088	1,043,259	79,498	173,470	729,082	233,421	287,427	871,020	552,553	20,871	151,119	313,738	284,387	7,950	31,485	162,821	165,465	78,770	28,468	6,871,892
5-year average	1,833,335	1,090,960	113,497	212,360	921,923	264,221	286,935	1,288,941	719,323	127,001	151,102	370,153	284,878	6,661	40,724	133,675	260,151	103,101	42,390	8,360,831
1925-26	1,595,545	1,497,004	73,145	172,560	757,987	332,170	306,083	1,041,903	575,673	204,500	179,998	160,926	243,939	6,395	38,309	115,907	51,784	61,424	33,041	7,453,293
1924-25	1,575,684	1,411,101	75,443	202,354	834,138	400,105	332,723	458,375	494,854	135,270	140,995	422,429	252,040	5,906	39,758	86,256	23,730	132,379	59,528	7,083,068
1923-24	1,146,891	1,001,049	47,321	122,588	490,850	300,121	231,923	366,742	389,995	153,890	102,358	351,102	185,063	5,896	26,566	71,826	13,280	43,809	6,491	5,057,761
1922-23	1,455,078	734,856	24,468	81,603	492,705	268,928	255,592	193,400	301,890	71,790	88,382	297,280	160,035	6,033	16,250	49,872	7,011	36,435	32,717	4,574,325
1921-22	1,305,810	659,907	16,322	74,898	306,073	289,866	380,479	49,374	179,096	234,771	146,800	217,532	72,257	5,356	12,712	25,761	6,446	25,688	-	4,000,648
5-year average	1,415,802	1,060,783	48,340	130,800	576,351	318,238	301,360	421,959	388,302	160,044	131,707	289,854	182,667	6,017	26,719	69,924	20,450	59,947	26,355	5,635,619
1920-21	1,152,960	706,919	14,977	32,667	305,041	242,589	317,196	88,490	189,834	164,194	134,835	135,484	170,722	3,710	7,837	15,006	1,932	21,546	-	3,704,939
1919-20	739,548	493,781	12,151		154,444	146,918	238,692	78,165	140,137	145,072	152,852	182,843	81,650	8,550	10,974	4,146	-	14,418	-	2,604,341
1918-19	1,350,665		606,793		110,096	74,183	173,436	336,616		127,467	144,600	107,633	139,409	10,800	2,441	1,672	-	-	-	3,185,811
1917-18	1,572,671		668,250		200,265	130,978	199,295	1,028,580		131,038	136,800	91,512	139,995	8,750	10,472	2,539	-	-	-	4,321,145
1916-17	1,603,920		944,500		184,191	139,031	269,180	1,321,600		156,000	112,800	146,293	126,354	8,250	9,022	14,646	-	-	-	5,025,787
5-year average	1,293,953		595,868		190,807	145,970	239,560	636,685		143,554	136,377	132,753	131,626	8,012	8,149	7,602	386	7,193	-	3,768,405
1915-16	1,732,200		1,011,400		135,899	112,097	242,753	1,654,361		127,315	125,200	150,041	106,444	16,000	11,591	28,402	1,918	-	-	5,456,621
1914-15	2,639,330		1,602,315		302,961	204,697	302,458	1,967,336		157,547	153,000	150,871	101,815	12,350	21,861	30,201	-	-	-	7,646,542
1913-14	2,617,937		1,682,678		717,400	229,049	229,257	1,687,799		137,082	145,700	304,977	169,355	4,625	7,352	34,758	-	-	-	7,967,969
1912-13	2,732,189		1,919,853		978,838	300,253	316,933	1,383,754		145,137	149,400	198,338	113,755	3,000	7,000	34,173	-	-	-	8,282,623
1911-12 2/	1,505,479		1,154,606		516,618	246,220	267,607	2,058,635		134,999	110,250	158,663	138,774	2,350	7,757	36,180	-	-	-	6,338,438
5-year average	2,245,427		1,474,170		530,343	218,665	271,802	1,750,377		140,356	136,710	192,578	126,029	7,785	11,112	32,743	384	-	-	7,138,474

Source: Basic figures reported in Willet & Gray's Weekly Statistical Sugar Trade Journal.

1/ Refined sugar.

2/ Figures by separate countries not available in same detail as in above table for crop years prior to 1911-12. The European totals estimated for prior years [illegible]

1910-11	8,105,126
1909-10	6,136,911
1908-09	6,543,865
1907-08	6,562,274
1906-07	6,710,808
5-year average	6,811,797
1905-06	6,932,343
1904-05	4,708,758
1903-04	5,831,333
1902-03	5,561,257
1901-02	6,759,478
5-year average	5,966,834

Table 81.- Sugar: Harvesting periods in different countries throughout the world

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Cane Sugar												
United States - principal supply areas 1/												
Louisiana	X									X	X	X
Florida	X	X	X	X								X
U.S. insular areas-												
Puerto Rico	X	X	X	X	X	X						
Virgin Islands	X	X	X	X	X	X						
Hawaiian Islands	X	X	X	X	X	X				X	X	X
West Indies												
Cuba	X	X	X	X	X	X						X
Jamaica	X	X	X	X	X	X						
Trinidad	X	X	X	X	X	X						
Barbados	X	X	X	X	X	X						
Antigua		X	X	X	X	X	X					
St. Kitts		X	X	X	X	X	X	X				
Other British West Indies	X	X	X	X	X	X						
Martinique	X	X	X	X	X	X	X					
Guadaloupe	X	X	X	X	X	X	X					
San Domingo	X	X	X	X	X	X						
Haiti	X	X	X	X	X	X				X		X
Mexico	X	X	X	X	X	X						X
Central American countries	X	X	X	X	X	X						
South America												
Demerara					X	X				X	X	X
Surinam	X									X	X	X
Venezuela	X	X	X	X	X	X				X	X	X
Ecuador	X					X	X	X	X	X	X	X
Peru	2/X	X	X	X	X	X	X	X	X	X	X	X
Argentine						X	X	X	X	X	X	
Brazil	X	X	X	X	X	X	X	X	X	2/X	X	X
Asia												
British India	X	X	X	X	X							X
Java					X	X	X	X	X	X	X	
Formosa & Japan	X	X	X	X	X	X					X	X
Philippine Islands	X	X	X	X	X	X					X	X
Africa												
Egypt	X	X	X	X	X	X						
Mauritius	X							X	X	X	X	X
Reunion	X							X	X	X	X	X
Natal	X				X	X	X	X	X	X	X	X
Mozambique					X	X	X	X	X	X		
Europe - Spain	X	X	X	X	X	X						X
Oceania - Australia						X	X	X	X	X	X	
Fiji Islands						X	X	X	X	X	X	
Beet Sugar												
Europe												
Continental nations listed in table 6h	X								X	X	X	X
Exceptions follow-												
Sweden									X	X	X	X
Italy								X	X	X		
Spain	X	X					X	X	X	X	X	X
America												
United States	X						X	X	X	X	X	X
Canada										X	X	X

Source: Compiled from Willett & Gray's Weekly Statistical Sugar Trade Journal.
1/ Except Philippine Islands, included under Asia. 2/ Harvest begins.

CONSUMPTION

ages

Crop-source	rket deliveries 1912-1916	1907-1911	1902-1906	1897-1901
Continental United State				
Cane	5.7	10.5	11.3	11.1
Beet	17.5	14.0	8.1	3.2
Total	23.2	24.5	19.4	14.3
U.S. insular areas -				
Hawaii	14.0	14.2	12.9	12.0
Virgin Islands	2/	2/	2/	2/
Puerto Rico	8.6	7.4	4.5	2.1
Philippines	2.9	2.3	.8	.7
Total	25.5	23.9	18.2	14.8
Total U.S. continental a insular	48.7	48.4	37.6	29.1
Foreign -				
Cuba	49.7	41.7	38.0	16.6
Other foreign	1.1	9.4	23.4	53.5
Total foreign	50.8	51.1	61.4	70.1
Miscellaneous	.5	.5	.9	.8
Total market deliveries domestic consumption (a sources)	00.0	100.0	100.0	100.0

1/ Based on Willett and ally refined.
2/ Reported among "Othe
3/ Includes average del

Table 9. - Sugar: Crop-sources of sugar marketed for consumption in the United States, by 5-year averages for period from 1897 to 1932, inclusive 1/

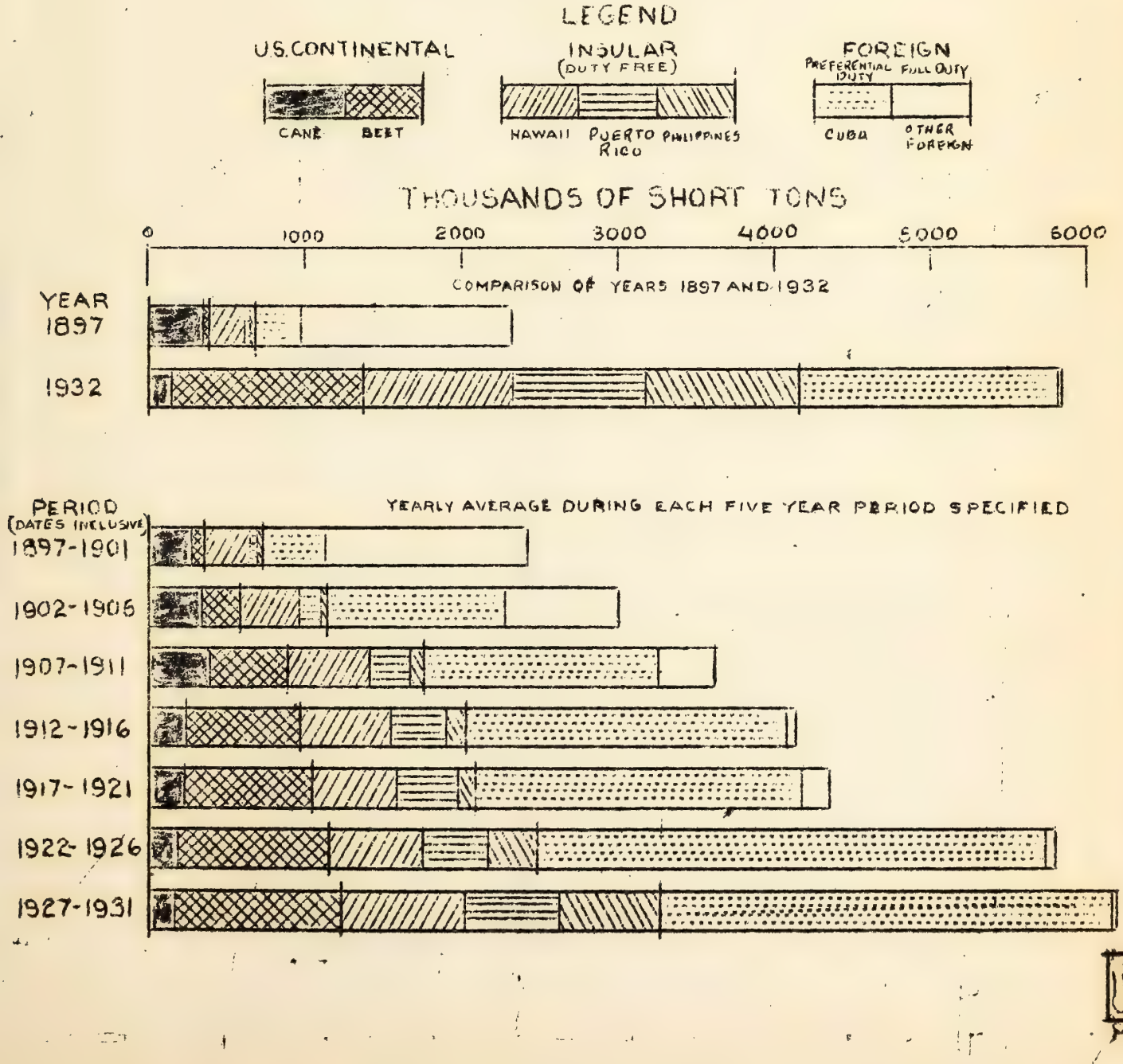
Crop-source	Quantity - in thousands of short tons								Percentage of total market deliveries							
	Year 1932	1927-1931	1922-1926	1917-1921	1912-1916	1907-1911	1902-1906	1897-1901	Year 1932	1927-1931	1922-1926	1917-1921	1912-1916	1907-1911	1902-1906	1897-1901
Continental United States -																
Cane	150	145	171	223	237	378	339	267	2.6	2.3	3.0	5.1	5.7	10.5	11.3	11.1
Beet	1,232	1,064	959	803	725	508	244	77	21.1	17.1	16.5	18.4	17.5	14.0	8.1	3.2
Total	1,382	1,209	1,130	1,026	962	886	583	344	23.7	19.4	19.5	23.5	23.2	24.5	19.4	14.3
U.S. insular areas -																
Hawaii	957	800	601	540	579	514	385	289	16.4	12.9	10.4	12.4	14.0	14.2	12.9	12.0
Virgin Islands	4	6	5	7	2/	2/	2/	2/	.1	.1	.1	.2	2/	2/	2/	2/
Puerto Rico	851	610	418	394	355	267	136	50	14.6	9.8	7.2	9.0	8.6	7.4	4.5	2.1
Philippines	974	642	313	98	119	82	25	18	16.6	10.3	5.4	2.3	2.9	2.3	.8	.7
Total	2,786	2,058	1,337	1,039	1,053	863	546	357	47.7	33.1	23.0	23.9	25.5	23.9	18.2	14.8
Total U.S. continental and insular	4,168	3,267	2,467	2,065	2,015	1,749	1,129	701	71.4	52.6	42.5	47.4	48.7	48.4	37.6	29.1
Foreign -																
Cuba	1,647	2,918	3,262	2,116	2,057	1,508	1,139	401	28.2	47.0	56.2	48.6	49.7	41.7	38.0	16.6
Other foreign	25	24	72	149	46	229	702	1,287	.4	.4	1.3	3.4	1.1	9.4	23.4	53.5
Total foreign	1,672	2,942	3,334	2,265	2,103	1,737	1,841	1,688	28.6	47.4	57.5	52.0	50.8	51.1	61.4	70.1
Miscellaneous	-	1	2	24	19	19	27	3/ 18	-	-	-	.6	.5	.5	.9	.8
Total market deliveries for domestic consumption (all sources)	5,840	6,210	5,803	4,354	4,137	3,615	2,997	3/2,407	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Based on Willett and Gray. The quantity is reported according to the weight of the sugar as consumed, refined and/or partially refined.
2/ Reported among "Other foreign" prior to 1917.
3/ Includes average deliveries from stocks (unclassified) of some 5,000 tons.

CHART 1

Crop sources of sugar marketed for consumption in the United States by 5-year averages from 1897 to 1932, inclusive

Expressed in quantities

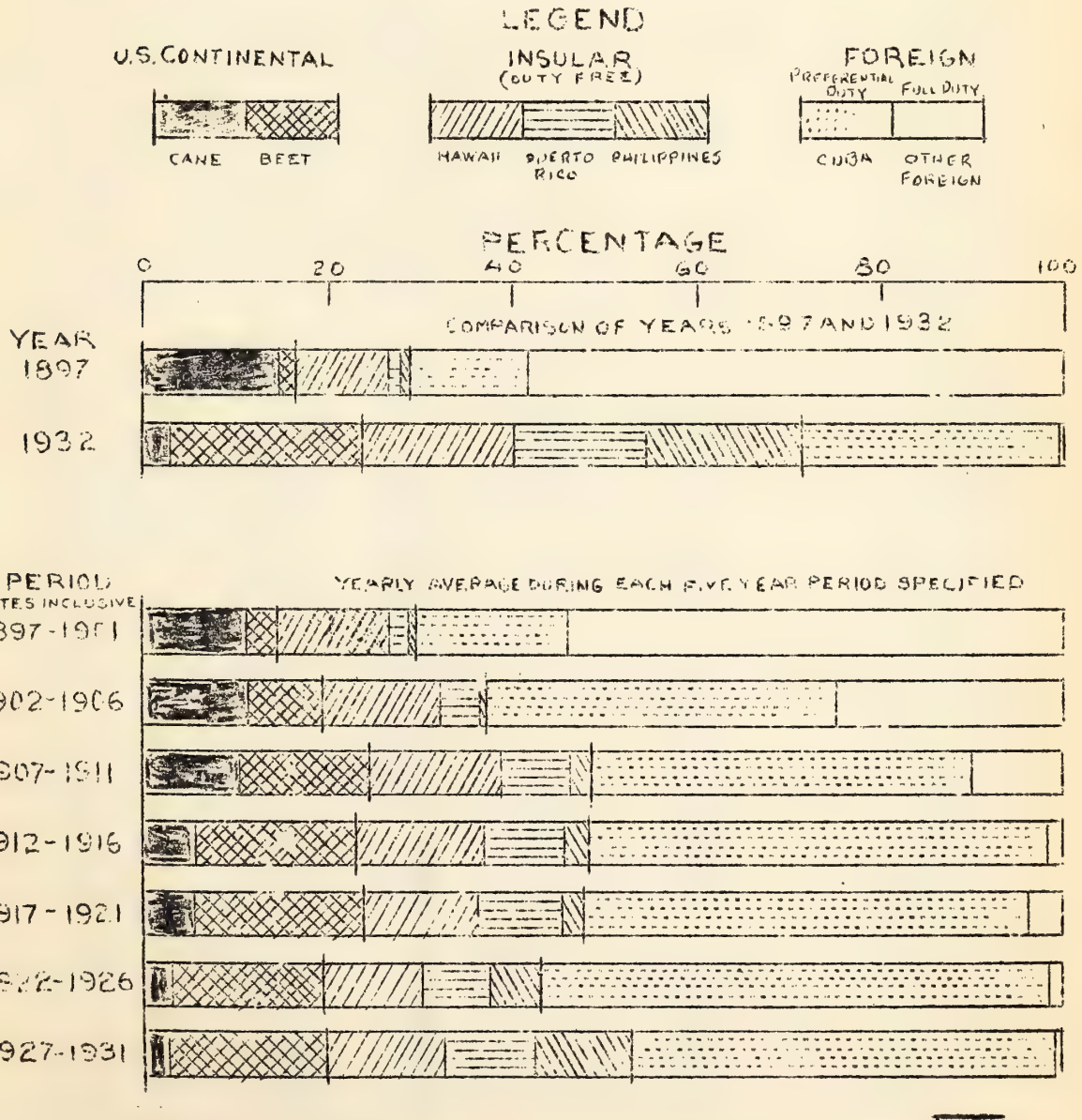


M-D

CHART 2

Crop sources of sugar marketed for consumption in the United States by 5-year averages from 1897 to 1932, inclusive

Expressed in percentages of total market delivery



M-D

ources

Year	Continental Uni		Total foreign	Miscellaneous	Total deliveries all source
	Cane	Beet			
1932 -----	149,763	1,232,15	1,672,005	-	5,839,63
1931 -----	192,412	1,255,31	2,318,021	-	6,132,22
1930 -----	184,439	1,066,0	2,781,272	-	6,271,30
1929 -----	176,482	959,4	3,392,795	853	6,508,29
1928 -----	129,639	1,161,7	2,953,365	1,194	6,207,75
1927 -----	43,229	874,0	3,268,680	1,551	5,932,69
5-yr. av.	145,240	1,063,3	2,942,827	719	6,210,45
1926 -----	78,690	977,5	3,730,808	1,789	6,351,89
1925 -----	139,949	993,8	3,295,987	1,633	6,171,267
1924 -----	91,446	834,0	3,260,313	2,038	5,437,01
1923 -----	241,475	985,5	3,105,380	2,342	5,354,36
1922 -----	305,728	1,005,3	3,279,289	2,660	5,703,88
5-yr. av.	171,457	959,2	3,334,357	2,092	5,803,68
1921 -----	305,506	1,060,6	2,120,027	2,547	4,600,207
1920 -----	91,420	508,9	3,003,257	19,146	4,574,83
1919 -----	172,518	976,9	2,379,764	38,185	4,555,791
1918 -----	253,428	591,0	2,112,613	33,046	3,915,07
1917 -----	289,456	879,2	1,693,833	29,695	4,125,631
5-yr av.	222,466	803,3	2,265,099	24,524	4,354,30
1916------	251,975	784,2	1,835,368	15,680	4,097,64
1915 -----	251,740	861,1	2,085,811	17,248	4,257,715
1914 -----	161,275	699,7	2,314,941	22,624	4,212,126
1913 -----	232,633	700,1	2,249,396	21,784	4,192,316
1912 -----	288,057	578,1	1,983,759	16,974	3,924,684
5-yr. av.	237,137	724,1	2,103,455	18,862	4,136,896
1911 -----	322,643	567,1	1,801,320	18,939	3,753,558
1910 -----	372,967	511,1	1,918,084	17,024	3,752,398
1909 -----	459,155	486,1	1,823,329	22,552	3,648,579
1908 -----	437,795	552,1	1,793,531	18,939	3,568,084
1907 -----	296,764	420,1	1,899,181	18,199	3,353,257
5-yr. av.	377,865	507,1	1,847,088	19,131	3,615,174
1906 -----	300,101	336,1	1,906,088	15,848	3,207,695
1905 -----	374,665	247,1	1,724,793	23,386	2,948,082
1904 -----	362,487	190,1	1,989,435	30,587	3,099,221
1903 -----	327,936	277,1	1,689,877	29,876	2,855,600
1902 -----	331,520	166,1	1,897,438	32,396	2,874,041
5-yr.av.	339,341	243,1	1,841,526	26,419	2,996,927

Based on Willett and Gray.

1/ Included in "Other for

Table 10. - Sugar - Delivered for consumption in the United States - from specified crop sources
years 1902 to 1932, inclusive

(Refined and/or consumption basis - In short tons)

Year	Continental United States			United States Insular Areas				U.S.total	Foreign				Total
	Cane	Beet	Total Continental	Hawaii	Virgin Islands	Puerto Rico	Philippines	Total Insular	Continental and Insular	Cuba	Other foreign	Total foreign	Miscellaneous	deliveries all sources
1932	149,763	1,232,156	1,381,919	956,868	4,049	851,105	973,693	2,785,712	4,167,631	1,647,343	24,762	1,672,005	-	5,839,636
1931	192,412	1,255,316	1,447,728	903,746	1,806	699,363	761,564	2,366,479	3,814,207	2,280,563	37,458	2,318,021	-	6,132,228
1930	184,439	1,066,050	1,250,489	753,136	5,662	728,892	751,851	2,239,541	3,490,030	2,752,745	28,527	2,781,272	-	6,271,302
1929	176,482	959,437	1,135,919	867,932	3,745	430,013	677,041	1,978,731	3,114,650	3,376,345	16,450	3,392,795	853	6,508,298
1928	129,639	1,161,710	1,291,349	765,505	10,250	652,889	533,200	1,961,844	3,253,193	2,920,410	32,955	2,953,365	1,194	6,207,752
1927	43,229	874,005	917,234	712,057	6,122	540,365	486,687	1,745,231	2,662,465	3,462,446	6,234	3,268,680	1,551	5,932,696
5-yr. av.	145,240	1,063,304	1,208,544	800,475	5,517	610,305	642,068	2,058,348	3,266,909	2,918,502	24,325	2,942,827	719	6,210,452
1926	78,690	977,553	1,056,243	692,270	5,689	514,846	350,250	1,563,055	2,619,298	3,686,252	44,556	3,730,808	1,789	6,351,895
1925	139,949	993,803	1,133,752	712,854	9,510	564,070	453,461	1,739,895	2,873,647	3,258,120	37,867	3,295,987	1,633	6,171,267
1924	91,446	834,030	925,476	566,684	2,429	382,834	297,242	1,249,189	2,174,665	3,163,054	97,259	3,260,313	2,038	5,437,016
1923	241,475	985,520	1,226,995	515,031	1,578	281,363	221,677	1,019,649	2,246,644	2,966,010	139,370	3,105,380	2,342	5,354,366
1922	305,728	1,005,344	1,311,072	516,869	5,304	348,512	240,183	1,110,868	2,421,940	3,237,439	41,850	3,279,289	2,660	5,703,889
5-yr. av.	171,457	959,250	1,130,707	600,741	4,902	418,325	312,563	1,336,531	2,467,238	3,262,176	72,181	3,334,357	2,092	5,803,687
1921	305,506	1,060,614	1,366,120	540,201	5,790	418,614	146,908	1,111,513	2,477,633	2,090,091	29,936	2,120,027	2,547	4,600,207
1920	91,420	508,980	600,400	437,418	11,749	375,128	127,734	952,029	1,552,429	2,382,756	620,501	3,003,257	19,146	4,574,832
1919	172,518	976,923	1,149,441	576,603	9,280	321,306	81,213	988,401	2,137,842	2,315,037	64,667	2,379,764	38,185	4,555,791
1918	253,428	591,028	844,456	481,344	4,136	371,307	52,177	908,964	1,753,420	2,106,993	21,620	2,112,613	33,046	3,815,079
1917	289,456	879,289	1,168,745	663,139	5,694	482,946	81,578	1,233,358	2,402,103	1,067,703	6,132	1,693,833	29,695	4,125,631
5-yr av.	222,466	803,367	1,025,835	539,739	7,330	393,860	97,923	1,038,658	2,064,685	2,110,518	148,571	2,265,089	24,524	4,354,308
1916	251,975	784,287	1,036,262	598,045	1/	439,861	124,524	1,162,430	2,198,692	1,636,534	16,734	1,653,268	15,680	4,097,640
1915	251,740	861,568	1,113,308	570,375	-	336,347	134,626	1,041,349	2,154,656	2,062,594	23,217	2,085,811	17,248	4,257,715
1914	161,275	699,214	860,489	571,631	-	307,047	135,394	1,014,072	1,874,561	2,261,116	53,825	2,314,941	22,624	4,212,126
1913	232,633	700,352	932,985	567,342	-	370,835	49,974	988,151	1,921,136	2,229,751	19,665	2,249,396	21,784	4,192,316
1912	288,057	578,873	866,930	589,435	-	319,823	147,764	1,057,022	1,923,951	1,664,647	119,112	1,983,759	16,974	3,924,684
5-yr. av.	237,137	724,858	961,995	579,365	-	354,782	118,157	1,052,604	2,014,599	2,056,925	46,510	2,103,435	18,962	4,136,896
1911	322,643	567,644	890,287	540,099	-	314,296	188,617	1,043,012	1,933,299	1,578,370	222,950	1,801,320	18,939	3,753,558
1910	372,967	511,840	884,807	514,223	-	310,003	108,257	932,483	1,817,290	1,837,004	81,080	1,918,084	17,024	3,752,398
1909	459,155	486,080	945,235	541,712	-	263,331	52,420	857,463	1,802,698	1,598,835	224,494	1,823,329	22,552	3,648,579
1908	437,795	552,384	990,179	507,640	-	207,295	50,500	765,435	1,755,614	1,026,751	766,780	1,793,531	18,939	3,568,084
1907	296,764	420,457	717,223	468,274	-	238,396	11,984	718,654	1,435,877	1,501,248	397,933	1,899,181	18,199	3,353,257
5-yr. av.	377,865	507,681	885,546	514,389	-	266,664	82,356	863,409	1,748,955	1,508,442	338,646	1,847,088	19,131	3,615,174
1906	300,101	336,355	636,456	385,120	-	217,255	46,928	649,303	1,285,759	1,305,913	600,175	1,906,088	15,848	3,207,695
1905	374,665	247,208	621,873	421,677	-	139,919	16,434	578,030	1,199,903	1,233,804	490,989	1,724,793	23,386	2,948,082
1904	362,487	190,551	553,038	370,434	-	130,975	24,752	526,161	1,079,199	1,268,214	723,221	1,989,435	30,587	3,099,221
1903	327,936	277,271	605,207	400,792	-	96,308	33,540	530,640	1,135,847	999,172	690,705	1,689,877	29,876	2,855,600
1902	331,520	166,349	497,869	348,476	-	95,006	2,856	446,338	944,207	891,367	1,006,071	1,897,438	32,396	2,874,041
5-yr.av.	339,341	243,547	582,888	385,299	-	135,893	24,902	546,094	1,128,962	1,139,294	702,252	1,841,526	26,419	2,996,927

Based on Willett and Gray.

1/ Included in "Other foreign" prior to 1917.

Table 11. - Refined sugar: Quantitative geographical distribution in the United States of refined sugar from specified refining sources, 1928 to 1932, inclusive

(In thousands of short tons)

Marketing area and year	Refined in continental United States		U. S. insular-refined (free of duty)	Cuban-refined (preferential duty)	Refined in foreign countries (full duty)	Total all refining sources 1/
	Cane refineries	Beet sugar factories				

Table 11. - Refined sugar: Quantitative geographical distribution in the United States of refined sugar from specified refining sources, 1928 to 1932, inclusive

(In thousands of short tons)

Marketing area and year		Refined in continental United States: Cane refineries	Refined in continental United States: Beet sugar factories	U. S. insular-refined (free of duty)	Cuban-refined (preferential duty)	Refined in foreign countries (full duty)	Total all refining sources 1/
Atlantic Coast States	1932	2,111	42	82	357	4	2,596
	1931	2,283	93	74	267	1	2,718
	1930	2,499	10	66	184	6	2,765
	1929	2,488	8	42	188	2/	2,726
	1928	2,460	52	37	121	2	2,672
Gulf Coast States	1932	277	67	14	32	2	392
	1931	343	72	9	38	2	464
	1930	409	48	11	34	2	504
	1929	440	44	5	22	8	519
	1928	417	45	4	19	5	490
Interior Valley States -East of Mississippi River	1932	893	450	-	56	2/	1,399
	1931	1,041	492	2/	29	2/	1,562
	1930	1,157	392	-	32	2/	1,581
	1929	1,225	320	-	32	1	1,578
	1928	1,089	455	-	32	1	1,577
-West of Mississippi River	1932	321	440	-	1	-	762
	1931	363	405	-	2/	-	768
	1930	418	407	-	2/	2/	825
	1929	422	388	-	5	2/	815
	1928	401	422	-	2	2/	825
Pacific Coast and Mountain States	1932	325	235	86	-	3	649
	1931	370	207	55	6	2	640
	1930	398	204	48	13	1	664
	1929	421	194	16	27	3	661
	1928	395	213	25	23	6	662
All States - total 1/	1932	3,928	1,234	181	446	9	3/ 5,798
	1931	4,403	1,269	138	340	5	3/ 6,155
	1930	4,882	1,061	125	263	9	3/ 6,340
	1929	4,996	954	63	274	12	3/ 6,299
	1928	4,763	1,187	66	197	14	3/ 6,227
Net change - 1932 compared with 1928							
Atlantic Coast States		-349	-10	+45	+236	+2	-76
Gulf Coast States		-140	+22	+10	+13	-3	-98
Interior Valley States - -East of Mississippi River		-196	-5	-	+24	-1	-178
-West of Mississippi River		-80	+18	-	-1	2/	-63
Pacific Coast and Mountain States		-70	+22	+61	-23	-3	-13
All States - total 1/		-835	+47	+115	+249	-5	-429

Source: Basic figures from statistics compiled by The Sugar Institute, Inc.

1/ Includes small quantities purchased by the United States government, deliveries not specified.

2/ Small quantity.

3/ These totals do not agree with those in Table 14 by the amount of the undistributed differences shown in that table.

Table 12.- Refined sugar: Percentage of the consumption of each geographic area which was supplied from specified sources, 1928 to 1932, inclusive

(Percent)

Marketing area and year	Refined in continental United States: Cane refineries	Refined in continental United States: Beet sugar factories	U.S. insular-refined (free of duty)	Cuban-refined (preferential duty)	Refined in foreign countries which pay full duty	Total all sources
Atlantic coast States ----------1932	81.3	1.6	3.1	13.8	0.2	100.0
1931	84.0	3.4	2.7	9.8	.1	100.0
1930	90.4	.4	2.4	6.6	.2	100.0
1929	91.3	.3	1.5	6.9	1/	100.0
1928	92.1	1.9	1.4	4.5	.1	100.0
Gulf coast States ----------1932	70.7	17.1	3.7	8.1	.4	100.0
1931	73.9	15.5	1.9	8.2	.5	100.0
1930	81.2	9.5	2.2	6.7	.4	100.0
1929	84.9	8.4	1.0	4.2	1.5	100.0
1928	85.1	9.2	.8	3.9	1.0	100.0
Interior Valley States -East of Mississippi River -----1932	63.8	32.2	-	4.0	1/	100.0
1931	66.6	31.5	1/	1.9	1/	100.0
1930	73.2	24.8	-	2.0	-	100.0
1929	77.6	20.3	-	2.1	1/	100.0
1928	69.1	28.9	-	2.0	1/	100.0
-West of Mississippi River -----1932	42.1	57.8	-	.1	-	100.0
1931	47.3	52.7	-	1/	-	100.0
1930	50.7	49.3	-	1/	1/	100.0
1929	51.8	47.6	-	.6	1/	100.0
1928	48.6	51.2	-	.2	1/	100.0
Pacific coast and Mountain States-1932	50.0	36.3	13.2	-	.5	100.0
1931	58.0	32.2	8.6	.9	.3	100.0
1930	60.0	30.7	7.2	1.9	.2	100.0
1929	63.7	29.3	2.5	4.1	.4	100.0
1928	59.7	32.2	2.6	3.5	1.0	100.0
All States - total ----------1932	67.8	21.3	3.1	7.7	.1	100.0
1931	71.5	20.6	2.3	5.5	.1	100.0
1930	77.0	16.7	2.0	4.2	.1	100.0
1929	79.3	15.1	1.0	4.4	.2	100.0
1928	76.5	19.1	1.1	3.1	.2	100.0

Source: Based on table 11.
1/ Nominal.

Atlan

Gulf

Inter
-Eas

-Wes

Pacif

All S

Sourc
1/ No

Table 13.- Refined sugar: Percentage of the supply from each specified source which was marketed in each geographic area, 1928 to 1932, inclusive

(Percent)

Marketing area and year		Refined in continental United States		U. S. insular-refined (free of duty)	Cuban-refined (preferential duty)	Refined in foreign countries which pay full duty	Proportion of total in areas from all sources to total domestic deliveries
		Cane refineries	Beet sugar factories				
Atlantic coast States	1932	53.7	3.4	45.0	80.1	43.5	44.8
	1931	51.8	7.3	53.6	78.5	20.0	44.2
	1930	51.2	.9	52.3	70.0	66.7	43.6
	1929	49.8	.8	67.0	68.6	-	43.3
	1928	51.6	4.4	56.9	61.3	14.3	42.9
Gulf coast States	1932	7.1	5.4	7.9	7.1	20.0	6.8
	1931	7.8	5.7	6.5	11.2	40.0	7.5
	1930	8.4	4.5	8.8	12.9	22.2	8.0
	1929	8.8	4.6	7.9	8.0	66.7	8.2
	1928	8.8	3.8	6.2	9.7	35.7	7.9
Interior Valley States							
-East of Mississippi River	1932	22.7	36.4	-	12.6	1.3	24.1
	1931	23.6	38.8	1/	8.5	1/	25.4
	1930	23.7	37.0	-	12.2	1/	24.9
	1929	24.5	33.6	-	11.7	8.3	25.1
	1928	22.9	38.3	-	16.3	7.1	25.3
-West of Mississippi River	1932	8.2	35.7	-	.2	-	13.1
	1931	8.2	31.9	-	1/	-	12.5
	1930	8.6	38.4	-	1/	1/	13.0
	1929	8.5	40.7	-	1.8	1/	12.9
	1928	8.4	35.6	-	1.0	1/	13.3
Pacific coast and Mountain States	1932	8.3	19.1	47.1	-	35.2	11.2
	1931	8.6	16.3	39.9	1.8	40.0	10.4
	1930	8.1	19.2	38.4	4.9	11.1	10.5
	1929	8.4	20.4	25.1	9.9	25.0	10.5
	1928	8.3	17.9	36.9	11.7	42.9	10.6
All States - total	1932	100.0	100.0	100.0	100.0	100.0	100.0
	1931	100.0	100.0	100.0	100.0	100.0	100.0
	1930	100.0	100.0	100.0	100.0	100.0	100.0
	1929	100.0	100.0	100.0	100.0	100.0	100.0
	1928	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on table 11.

1/ Nominal.

MAP SHOWING BEET AND CANE SUGAR FACTORIES AND CANE SUGAR REFINERIES IN THE UNITED STATES

Table 14. - Sugar: Analysis of total domestic consumption of sugar, to show area where consumed, where refined, and where the crops were grown, 1928 to 1932, inclusive, in quantities

(Quantity - in short tons)

	1932	Yearly average 1928-1931 inclusive	1931	1930	1929	1928
Total deliveries for domestic consumption	5,839,636	6,270,[illegible]				

Table 14. - Sugar: Analysis of total domestic consumption of sugar, to show area where consumed, where refined, and where the crops were grown, 1928 to 1932, inclusive, in quantities

(Quantity - in short tons)

	1932	Yearly average 1928-1931 inclusive	1931	1930	1929	1928
Total deliveries for domestic consumption	5,839,636	6,279,895	6,132,228	6,271,302	6,508,298	6,207,752
Where the sugar was consumed						
Atlantic Coast States	2,595,800	2,720,268	2,717,792	2,764,897	2,726,260	2,672,124
Gulf Coast States	392,055	494,258	464,027	504,682	518,440	489,882
Mississippi Valley States -						
East of Mississippi River	1,398,918	1,574,495	1,562,267	1,580,516	1,578,443	1,576,754
West of Mississippi River	761,962	808,347	767,848	825,370	814,611	825,560
Pacific Coast and Mountain States	649,257	657,281	642,817	663,685	660,937	661,684
U.S. Government	332	649	302	1,344	231	719
Undistributed difference 1/	41,312	24,597	-22,825	-69,168	209,376	-18,971
Total deliveries	5,839,636	6,279,895	6,132,228	6,271,302	6,508,298	6,207,752
Where the sugar was refined						
U.S. mainland (total)	5,140,551	5,822,799	5,598,833	5,834,275	5,994,119	5,863,970
Cane (total)	3,908,395	4,712,171	4,343,517	4,768,225	5,034,682	4,702,260
U.S. refiners	3,859,271	4,665,220	4,291,545	4,703,198	5,005,398	4,660,738
Direct consumption 2/	49,124	46,439	51,972	65,027	28,431	40,328
Miscellaneous 3/	4/	512	4/	4/	853	1,194
Beet	1,232,156	1,110,628	1,255,316	1,066,050	959,437	1,161,710
U.S. insular areas (total) 5/	193,052	96,422	133,927	116,791	66,263	68,705
Hawaii	24,321	13,248	10,069	17,073	9,905	15,943
Puerto Rico	111,194	59,392	77,106	72,614	43,042	44,807
Philippine Islands	57,537	23,782	46,752	27,104	13,316	7,955
Cuba (preferential duty) 6/	492,635	341,913	393,640	300,112	432,721	241,178
Countries paying full duty	13,398	18,761	5,828	20,124	15,195	33,899
Total deliveries	5,839,636	6,279,895	6,132,228	6,271,302	6,508,298	6,207,752
Where the crops were grown						
U.S. mainland (total)	1,381,919	1,281,883	1,447,728	1,250,489	1,136,772	1,292,543
Cane	149,763	171,255	192,412	184,439	177,335	130,833
Beet	1,232,156	1,110,628	1,255,316	1,066,050	959,437	1,161,710
U.S. insular areas (total)	2,785,712	2,136,649	2,366,479	2,239,541	1,978,731	1,961,844
Hawaii	956,868	822,580	903,746	753,136	867,932	765,505
Puerto Rico	851,102	627,789	699,363	728,892	430,013	652,889
Philippine Islands	973,693	680,914	761,564	751,851	677,041	533,200
Virgin Islands	4,049	5,366	1,806	5,662	3,745	10,250
Cuba (preferential duty)	1,647,243	2,832,516	2,280,563	2,752,745	3,376,345	2,920,410
Countries paying full duty	24,762	28,847	37,458	28,527	16,450	32,955
Total deliveries	5,839,636	6,279,895	6,132,228	6,271,302	6,508,298	6,207,752

Source: Basic data from Willett and Gray.

1/ Represents difference in figures compiled by Willett and Gray as compared with those prepared by the Sugar Institute, Inc.
2/ Principally sugar grown and milled in Louisiana. These figures differ considerably in some years from those reported by other sources.
3/ Various sugars, including domestic maple sugar.
4/ Not separately reported.
5/ Includes some direct consumption sugar.
6/ Includes considerable quantities of direct consumption sugar.

Table 15. - Sugar: Analysis of total domestic consumption of sugar, to show [illegible] refined and where the crops were

Table 15. - Sugar: Analysis of total domestic consumption of sugar, to show area where consumed, where refined, and where the crops were grown, 1928 to 1932, inclusive, in percentages

	1932	Yearly average 1928-1931 inclusive	1931	1930	1929	1928
Total deliveries for domestic consumption (short tons)	5,839,636	6,279,895	6,132,228	6,271,302	6,508,298	6,207,752
	Percentage of total domestic deliveries (approximate)					
Where the sugar was consumed						
Atlantic Coast States	44.5	43.3	44.3	44.1	41.9	43.0
Gulf Coast States	6.7	7.9	7.6	8.0	8.0	7.9
Mississippi Valley States						
East of Mississippi River	24.0	25.1	25.5	25.2	24.3	25.4
West of Mississippi River	13.0	12.9	12.5	13.2	12.5	13.3
Pacific Coast and Mountain States	11.1	10.4	10.5	10.6	10.1	10.7
U. S. Government	1/	1/	1/	1/	1/	1/
Undistributed difference 2/	+.7	+.4	-.4	-1.1	+3.2	-.3
Total deliveries	100.0	100.0	100.0	100.0	100.0	100.0
Where the sugar was refined						
U. S. mainland (total) 7/	88.0	92.7	91.3	93.0	92.1	94.5
Cane (total)	66.9	75.0	70.8	76.0	77.4	75.8
U. S. refiners	66.1	74.3	69.9	75.0	76.9	75.1
Direct consumption 3/	.8	.7	.9	1.0	.5	.7
Miscellaneous 4/	5/	1/	5/	5/	1/	1/
Beet	21.1	17.7	20.5	17.0	14.7	18.7
U. S. insular areas (total) 6/	3.3	1.6	2.2	1.9	1.0	1.1
Hawaii	.4	.2	.2	.3	.1	.3
Puerto Rico	1.9	1.0	1.3	1.2	.7	.7
Philippine Islands	1.0	.4	.7	.4	.2	.1
Cuba (preferential duty) 7/	8.5	5.4	6.4	4.8	6.7	3.9
Countries paying full duty	.2	.3	.1	.3	.2	.5
Total deliveries	100.0	100.0	100.0	100.0	100.0	100.0
Where the crops were grown						
U. S. mainland (total)	23.7	20.4	23.6	19.9	17.5	20.8
Cane	2.6	2.7	3.1	2.9	2.7	2.1
Beet	21.1	17.7	20.5	17.0	14.8	18.7
U. S. insular areas (total)	47.7	34.0	38.6	35.7	30.4	31.6
Hawaii	16.4	13.1	14.8	12.0	13.3	12.3
Puerto Rico	14.6	10.0	11.4	11.6	6.6	10.5
Philippine Islands	16.6	10.8	12.4	12.0	10.4	8.6
Virgin Islands	.1	.1	-	.1	.1	.2
Cuba (preferential duty)	28.2	45.1	37.2	43.9	51.9	47.1
Countries paying full duty	.4	.5	.6	.5	.2	.5
Total deliveries	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on data prepared by The Sugar Institute, Inc., and by Willett and Gray.

1/ Nominal.
2/ Represents difference in figures compiled by Willett and Gray as compared with those prepared by the Sugar Institute, Inc.
3/ Principally sugar grown and milled in Louisiana. See footnote 2/ to table 14.
4/ Various sugars including U. S. maple sugar.
5/ Not separately reported.
6/ Includes some direct consumption sugar.
7/ Includes considerable quantities of direct consumption sugar.

Table 16. - Census statistics of sugar establishments in the United States engaged in the production of sugar

Census years 1925 to 1931,[1/] inclusive

Census year	Number of establishments	Wage earners (average for the year)	Wages	Cost of materials, fuel and purchased electrical energy	Value of products	Value added by manufacture	Horsepower
			(In thousands of dollars)				
Establishments producing sugar from sugar cane for direct consumption or for refining							
1931	68	2,032	1,333	10,008	13,981	3,973	-
1929	70	2,319	1,642	12,223	18,326	6,103	66,779
1927	53	971	639	5,830	8,009	2,179	45,705
1925	94	2,066	1,411	11,586	13,435	1,849	72,796
Establishments producing refined cane sugar principally from purchased raw cane sugar							
1931	19	11,855	15,547	335,933	395,303	59,370	-
1929	21	13,912	17,850	438,399	507,389	68,990	98,637
1927	21	13,996	17,707	551,594	597,446	45,851	86,979
1925	21	14,502	18,955	549,896	606,633	56,737	89,098
1923	20	15,254	20,044	681,880	726,242	44,361	72,682
1921	20	15,457	19,463	426,601	466,602	40,001	-
Establishments producing refined beet sugar from sugar beets							
1931	67	6,241	7,548	62,325	85,673	23,348	-
1929	82	7,496	10,021	70,960	108,553	37,592	146,393
1927	79	7,402	9,710	79,017	104,927	25,910	142,023
1925	89	8,872	12,088	87,038	132,339	45,301	146,985
Total - all establishments							
1931	154	20,128	24,428	408,266	494,957	86,691	-
1929	173	23,727	29,513	521,582	634,268	112,685	311,809
1927	153	22,369	28,056	636,441	710,382	73,940	274,707
1925	204	25,440	32,454	648,520	752,407	103,887	308,879

Sources: Statistical Abstract of the United States, 1932 and 1933.

1/ Including also years 1921 and 1923 for establishments producing refined cane sugar principally from purchased raw cane sugar.

DUTIABLE IMPORTS, DUTIES COLLECTED, EXPORTS, AND DRAWBACKS

From countries paying full duty									
Rate of duty per pound on -			Imports 1/			Duty (computed)		
75°	96°	100°	Quantity	Value	Unit value	Amount	Average ad valorem	Average
			Million pounds	Thousands	Cents per lb.	Thousands	Percent	Cents per lb.
0.95¢	1.685¢	2/ 1.90¢	430	$8,986	2.1	$7,127	79.31	1.655
do.	do.	do.	287	6,656	2.3	4,840	72.72	1.682
do.	do.	do.	480	12,966	2.7	7,965	61.43	1.657
do.	do.	do.	224	5,259	2.3	3,643	69.26	1.623
do.	do.	do.	10	214	2.2	159	74.44	1.638
0.71¢	1.256¢	1.36¢	9	235	2.6	112	47.66	1.219
do.	do.	do.	261	8,600	3.3	3,183	37.01	1.219
do.	do.	do.	282	10,562	3.7	4,459	42.22	1.579
do.	do.	do.	506	22,302	4.4	6,289	28.20	1.241
do.	do.	do.	225	11,232	5.0	2,816	25.07	1.248
do.	do.	do.	120	8,337	6.9	1,509	18.09	1.250
do.	do.	do.	1,680	250,968	14.9	21,530	8.58	1.282
do.	do.	do.	383	31,714	8.3	4,900	15.45	1.278
1.16¢	2¢	2.16¢	130	3,752	2.9	2,622	69.87	2.002
do.	do.	do.	50	2,202	4.4	1,047	47.53	2.078
1.24¢	2.206¢	2.39¢	35	1,267	3.6	671	52.98	1.916
do.	do.	do.	374	18,363	4.9	8,300	45.20	2.216
do.	do.	do.	219	9,011	4.1	4,849	53.81	2.208
do.	do.	do.	55	1,803	3.2	1,269	62.49	2.279
do.	do.	do.	39	1,313	3.3	905	68.92	2.292
do.	do.	do.	20	666	3.3	460	69.04	2.292
do.	do.	do.	45	1,335	3.0	1,054	78.99	2.343
do.	do.	do.	32	673	2.1	747	110.95	2.277
do.	do.	do.	95	1,738	1.8	2,148	123.62	2.256
1.7125¢	2.5¢	2.65¢	2	44	2.0	56	126.99	2.565
do.	do.	do.	61	918	1.5	1,541	167.88	2.505
do.	do.	do.	40	567	1.4	1,010	178.33	2.518

	Pounds
--------	36,332,165
31) ----	7,970
--------	4,139,407
--------	389,575
--------	400

Year		Pounds
1930	(Jan.1-June 17) -------	678,000
	(June 18-Dec. 31) -----	230,000
1931	----------	4,750,096
1932	----------	1,125,670

Table 17. - Sugar: United States Imports of Cane and Beet Sugar (Dutiable)

Period	Total dutiable						From Cuba						From countries paying full duty					
	Imports			Duty (computed)		Rate of duty per pound on -				Imports			Duty (computed)		Rate of duty per pound on -			Imports 1/			Duty (computed)		
	Quantity	Value	Unit value	Amount	Average ad valorem	75°	96°	100°	Quantity	Value	Unit value	Amount	Average ad valorem	75°	96°	100°	Quantity	Value	Unit value	Amount	Average ad valorem
Fiscal years	Million pounds	Thousands	Cents per lb.	Thousands	Percent	Cents per lb.			Million pounds	Thousands	Cents per lb.	Thousands	Percent	Cents per lb.			Million pounds	Thousands	Cents per lb.	Thousands	Percent	Cents per lb.
1910	3,899	$99,938	2.6	$52,738	52.77	1.353	0.76¢	1.348¢	2/ 1.52¢	3,468	$90,952	2.6	$45,611	50.15	1.315	0.95¢	1.685¢	2/ 1.90¢	430	$8,986	2.1	$7,127	79.31	1.655
1911	3,898	96,482	2.5	52,446	54.36	1.345	do.	do.	do.	3,610	89,826	2.5	47,606	53.00	1.318	do.	do.	do.	287	6,656	2.3	4,840	72.72	1.682
1912	3,710	104,105	2.8	50,535	48.54	1.362	do.	do.	do.	3,229	91,139	2.8	42,569	46.71	1.318	do.	do.	do.	480	12,966	2.7	7,965	61.43	1.657
1913	3,971	89,716	2.3	53,086	59.17	1.337	do.	do.	do.	3,747	84,456	2.3	49,443	58.54	1.320	do.	do.	do.	224	5,259	2.3	3,643	69.26	1.623
1914 (July 1,1913-Feb. 28, 1914)	2,727	55,499	2.0	36,147	65.13	1.325	do.	do.	do.	2,717	55,285	2.0	35,988	65.10	1.324	do.	do.	do.	10	214	2.2	159	74.44	1.638
(Mar. 1-June 30)	2,562	50,368	2.0	25,293	50.22	.987	0.568¢	1.0048¢	1.088¢	2,553	50,133	2.0	25,181	50.23	.986	0.71¢	1.256¢	1.36¢	9	235	2.6	112	47.66	1.219
1915	4,933	155,095	3.1	49,244	31.75	.998	do.	do.	do.	4,672	146,495	3.1	46,061	31.44	.986	do.	do.	do.	261	8,600	3.3	3,183	37.01	1.219
1916	5,483	200,968	3.7	55,275	27.50	1.008	do.	do.	do.	5,200	190,407	3.7	51,816	27.21	.996	do.	do.	do.	282	10,562	3.7	4,459	42.22	1.579
1917	5,297	231,468	4.4	53,971	23.32	1.019	do.	do.	do.	4,790	209,166	4.4	47,682	22.80	.995	do.	do.	do.	506	22,302	4.4	6,289	28.20	1.241
1918	4,747	229,724	4.8	47,781	20.80	1.006	do.	do.	do.	4,522	218,492	4.8	44,966	20.58	.994	do.	do.	do.	225	11,232	5.0	2,816	25.07	1.248
Calendar years																								
1919	6,793	381,349	5.6	67,909	17.81	1.000	do.	do.	do.	6,672	373,012	5.6	66,400	17.80	.995	do.	do.	do.	120	8,337	6.9	1,509	18.09	1.250
1920	7,421	918,886	12.4	78,663	8.56	1.060	do.	do.	do.	5,740	667,919	11.6	57,133	8.55	.995	do.	do.	do.	1,680	250,968	14.9	21,530	8.58	1.282
1921 (Jan. 1-May 27)	3,259	165,430	5.1	33,526	20.27	1.029	do.	do.	do.	2,875	133,726	4.7	28,625	21.40	.995	do.	do.	do.	383	31,714	8.3	4,900	15.45	1.278
(May 28-Dec. 31)	2,317	65,194	2.8	37,311	57.23	1.610	0.928¢	1.6¢	1.728¢	2,186	61,442	2.8	34,689	56.46	1.587	1.16¢	2¢	2.16¢	130	3,752	2.9	2,622	69.87	2.002
1922 (Jan.1-Sept. 21)	7,912	188,713	2.4	125,958	66.93	1.592	do.	do.	do.	7,862	186,510	2.4	124,911	66.97	1.589	do.	do.	do.	50	2,202	4.4	1,047	47.53	2.078
(Sept. 22-Dec. 31)	1,225	41,605	3.4	21,486	51.64	1.753	0.992¢	1.7648¢	1.912¢	1,190	40,337	3.4	20,814	51.60	1.748	1.24¢	2.206¢	2.39¢	35	1,267	3.6	671	52.98	1.916
1923	7,177	348,755	4.9	127,475	36.55	1.776	do.	do.	do.	6,803	330,392	4.9	119,175	36.07	1.752	do.	do.	do.	374	18,363	4.9	8,300	45.20	2.216
1924	7,657	327,098	4.3	135,099	41.30	1.764	do.	do.	do.	7,437	317,519	4.3	130,250	41.02	1.751	do.	do.	do.	219	9,011	4.1	4,349	53.81	2.208
1925	7,859	201,236	2.6	138,011	68.58	1.756	do.	do.	do.	7,803	199,433	2.6	136,742	68.56	1.752	do.	do.	do.	55	1,803	3.2	1,269	62.49	2.279
1926	8,280	192,744	2.3	145,428	75.45	1.756	do.	do.	do.	8,241	191,431	2.3	144,521	75.50	1.754	do.	do.	do.	39	1,313	3.3	905	68.92	2.292
1927	7,401	210,677	2.8	130,044	61.73	1.757	do.	do.	do.	7,381	210,011	2.9	129,584	61.70	1.755	do.	do.	do.	20	666	3.3	460	69.04	2.292
1928	6,643	161,272	2.4	117,154	72.64	1.764	do.	do.	do.	6,598	159,937	2.4	116,100	72.59	1.760	do.	do.	do.	45	1,335	3.0	1,074	78.99	2.343
1929	7,333	138,282	1.9	129,526	93.67	1.766	do.	do.	do.	7,300	137,609	1.9	128,780	93.58	1.764	do.	do.	do.	32	673	2.1	747	110.95	2.277
1930 (Jan. 1-June 17)	3,890	69,745	1.8	69,377	99.47	1.783	do.	do.	do.	3,794	68,007	1.8	67,229	98.86	1.772	do.	do.	do.	95	1,738	1.8	2,148	123.62	2.256
(June 18-Dec. 31)	2,288	28,050	1.2	45,766	163.16	2.000	1.37¢	2¢	2.12¢	2,285	28,006	1.2	45,710	163.21	2.000	1.7125¢	2.5¢	2.65¢	2	44	2.0	56	126.99	2.565
1931	4,879	64,560	1.3	98,455	152.50	2.018	do.	do.	do.	4,817	63,642	1.3	96,914	152.28	2.012	do.	do.	do.	61	918	1.5	1,541	167.88	2.505
1932	3,653	38,464	1.1	74,213	192.94	2.031	do.	do.	do.	3,613	37,897	1.1	73,203	193.16	2.026	do.	do.	do.	40	567	1.4	1,010	178.33	2.518

1/ The quantity of beet sugar imported (which is included in totals given) was as follows:

Year	Pounds
1911	24,775,830
1912	6,504,425
1913	182,119,403
1914 (July 1,1913-Feb.28,1914)	132,284
(Mar. 1-June 30)	999,326
1915	524,124
1916	83,131
1917	28,847
1918	750
1919	1,180
1920	36,332,165
1921 (May 28-Dec. 31)	7,970
1924	4,139,407
1928	389,575
1929	400
1930 (Jan.1-June 17)	678,000
(June 18-Dec. 31)	230,000
1931	4,750,096
1932	1,125,670

2/ Above No. 16, Dutch Standard.

Table 18. - Sugar: United States imports of sugar (cane and beet combined) testing below 99 degrees (polariscope test) compared with total imports of sugar testing 99 degrees and above, years 1923 to 1932, inclusive

(Dutiable imports only)

Year	Quantity-in millions of short tons			Percentage of total	
	Below 99 degrees (polariscope test)	99 degrees and above (polariscope test)	Total	Below 99 degrees (polariscope test)	99 degrees and above (polariscope test)
1932	1.38	0.44	1.82	75.8	24.2
1931	2.06	.38	2.44	84.5	15.5
1930	2.80	.29	3.09	90.6	9.4
1929	3.39	.27	3.66	92.6	7.4
1928	3.10	.22	3.32	93.4	6.6
1927	3.58	.12	3.70	96.7	3.3
1926	4.06	.08	4.14	98.0	2.0
1925	3.91	.02	3.93	99.5	.5
1924	3.81	.02	3.83	99.5	.5
1923	3.55	.04	3.59	98.8	1.2
Total	31.64	1.88	33.52	94.4	5.6
10-year average	3.16	.19	3.35	94.3	5.7

Source: Compiled from Foreign Commerce and Navigation of the United States.

Kind of s source, a
Cane sugar
From Cuba
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All foreign a
Beet sugar
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Table 19. - Sugar: Imports of cane sugar from Cuba and from other foreign countries and imports of beet sugar, by sugar degrees, 1923 to 1932, inclusive

(Quantity in short tons)

Kind of sugar, source, and year	Polariscope test: Below 95 degrees	95 degrees	96 degrees	97 degrees	98 degrees	Subtotal below 99 degrees	99 degrees	100 degrees	Subtotal 99 degrees and above	Total all degrees
Cane sugar										
From Cuba 1932	10,881	403,541	734,614	186,264	32,236	1,367,536	18,535	420,698	439,233	1,806,769
1931	850	769,923	1,031,883	223,556	8,259	2,034,471	22,358	352,082	374,440	2,408,911
1930	14,782	920,360	1,377,551	424,901	30,776	2,768,370	16,913	255,070	271,983	3,040,353
1929	3,858	1,309,263	1,871,005	195,614	6,659	3,386,399	7,979	255,966	263,945	3,650,344
1928	37,496	1,213,252	1,673,200	165,864	11,802	3,101,614	10,751	186,726	197,477	3,299,091
1927	1,376	1,524,199	1,909,690	113,577	29,551	3,578,393	23,728	88,706	112,434	3,690,827
1926	1,762	1,597,490	2,374,897	65,115	15,812	4,055,076	7,518	58,082	65,600	4,120,676
1925	7,287	1,395,297	2,412,298	61,619	20,699	3,897,200	3,207	1,324	4,531	3,901,731
1924	804	1,478,996	2,144,896	77,112	16,390	3,718,198	-	608	608	3,718,806
1923	8,214	1,257,338	2,085,611	27,287	7,018	3,385,468	1,763	14,288	16,051	3,401,519
Average-10 years	8,731	1,186,965	1,761,564	154,091	17,921	3,129,272	11,276	163,355	174,631	3,303,903
From foreign countries other than Cuba (full duty) 1932	251	4,165	6,350	6,798	2	17,556	291	1,990	2,281	19,847
1931	206	10,005	14,225	2,623	1	27,060	398	921	1,319	28,379
1930	278	4	31,413	-	30	31,725	11,143	5,376	16,519	48,244
1929	365	1,932	4,734	20	30	7,081	7,280	2,039	9,319	16,400
1928	292	68	95	18	374	847	15,944	5,518	21,462	22,309
1927	475	84	1,144	165	23	1,891	7,177	961	8,138	10,029
1926	1,675	18	333	1,745	30	3,801	12,200	3,740	15,940	19,741
1925	631	601	9,712	165	794	11,903	11,846	4,093	15,939	27,842
1924	5,248	18,706	58,282	1,408	6,970	90,614	5,508	11,628	17,136	107,750
1923	2,902	19,085	133,615	802	5,261	161,665	17,683	7,900	25,583	187,248
Average-10 years	1,232	5,467	25,990	1,375	1,351	35,415	8,947	4,417	13,364	48,779
All foreign countries - average-10 years	9,963	1,192,432	1,787,554	155,466	19,272	3,164,687	20,223	167,772	187,995	3,352,682
Beet sugar										
From all foreign countries										
1932	-	-	-	-	-	-	-	563	563	563
1931	-	-	-	-	-	-	100	2,275	2,375	2,375
1930	3	-	-	-	-	3	-	451	451	454
1929	-	-	-	-	-	-	-	1/	1/	1/
1928	1/	-	-	-	-	1/	-	195	195	195
1927	-	-	-	-	-	-	-	-	-	-
1926	-	-	-	-	-	-	-	-	-	-
1925	-	-	-	-	-	-	-	-	-	-
1924	1,654	-	-	-	-	1,654	-	416	416	2,070
1923	-	-	-	-	-	-	-	-	-	-
Average-10 years	166	-	-	-	-	166	10	390	400	566
Total cane and beet sugar from all countries - average-10 years	10,129	1,192,432	1,787,554	155,466	19,272	3,164,853	20,233	168,162	188,395	3,353,248

Compiled from Foreign Commerce and Navigation of the United States.

1/ Less than 1/2 ton.

Rates of duty under recent tariff acts

Under the Tariff Act of 1909, and under all subsequent tariff acts, the basic rate of duty was fixed on sugar testing not above 75 degrees, polariscope test, with a specified increase in the rate of duty for each degree above 75 degrees.

Basic rate on 75 degree sugar

(In cents per pound)

Act of 1909		Act of 1913		Act of 1921		Act of 1922		Act of 1930	
Full duty	Cuban	Full duty	Cuban	Full duty	Cuban	Full duty	Cuban	Full duty	Cuban
0.950	0.760	0.710	0.5680	1.16	0.928	1.240	0.9920	1.7125	1.37

The increment in the rate of duty for each degree of polariscope test above 75 degrees, as fixed in each of these tariff acts, was respectively as follows:

Increment on each degree above 75

(In cents per pound)

Act of 1909		Act of 1913		Act of 1921		Act of 1922		Act of 1930	
Full duty	Cuban	Full duty	Cuban	Full duty	Cuban	Full duty	Cuban	Full duty	Cuban
0.035	0.028	0.026	0.0208	0.04	0.032	0.046	0.0368	0.0375	0.03

Table 20 shows the amount of duty payable on sugars of different polariscope test for each degree above 75 degrees, when the basic rate and the respective increment fixed under the several tariff acts are applied. It will be noted that the amount of duty (expressed in cents per pound) payable, under each of these acts, on sugar testing 96 degrees, which is

the basis on which domestic cane refiners buy raw sugar, was respectively as follows:

Duty on 96 degree sugar

(In cents per pound)

Act of 1909		Act of 1913		Act of 1921		Act of 1922		Act of 1930	
Full duty	Cuban	Full duty	Cuban	Full duty	Cuban	Full duty	Cuban	Full duty	Cuban
1.685	1.348	1.256	1.0048	2.00	1.600	2.206	1.7648	2.5000	2.00

Table 20 also shows that the rate of duty on refined sugar of 100 degrees polariscope test, under each of these tariff acts has been:

Duty on 100 degree sugar

(In cents per pound)

Act of 1909		Act of 1913		Act of 1921		Act of 1922		Act of 1930	
Full duty	Cuban	Full duty	Cuban	Full duty	Cuban	Full duty	Cuban	Full duty	Cuban
1.900	1.520	1.360	1.088	2.16	1.728	2.390	1.9120	2.65	2.12

Table 20.- Sugar: Rates of duty under specified tariff acts on each degree of sugar testing 75 degrees and above 1/

(Cents per pound)

Basis test (degree)	1909		1913		1921		1922		1930	
	Full duty	Cuban duty	Full duty	Cuban duty	Full duty	Cuban duty	Full duty	Cuban duty	Full duty	Cuban duty
75	0.950	0.760	0.710	0.5680	1.16	0.928	1.240	0.9920	1.7125	1.37
76	.985	.788	.736	.5888	1.20	.960	1.286	1.0288	1.7500	1.40
77	1.020	.816	.762	.6096	1.24	.992	1.332	1.0656	1.7875	1.43
78	1.055	.844	.788	.6304	1.28	1.024	1.378	1.1024	1.8250	1.46
79	1.090	.872	.814	.6512	1.32	1.056	1.424	1.1392	1.8625	1.49
80	1.125	.900	.840	.6720	1.36	1.088	1.470	1.1760	1.9000	1.52
81	1.160	.928	.866	.6928	1.40	1.120	1.516	1.2128	1.9375	1.55
82	1.195	.956	.892	.7136	1.44	1.152	1.562	1.2496	1.9750	1.58
83	1.230	.984	.918	.7344	1.48	1.184	1.608	1.2864	2.0125	1.61
84	1.265	1.012	.944	.7552	1.52	1.216	1.654	1.3232	2.0500	1.64
85	1.300	1.040	.970	.7760	1.56	1.248	1.700	1.3600	2.0875	1.67
86	1.335	1.068	.996	.7968	1.60	1.280	1.746	1.3968	2.1250	1.70
87	1.370	1.096	1.022	.8176	1.64	1.312	1.792	1.4336	2.1625	1.73
88	1.405	1.124	1.048	.8384	1.68	1.344	1.838	1.4704	2.2000	1.76
89	1.440	1.152	1.074	.8592	1.72	1.376	1.884	1.5072	2.2375	1.79
90	1.475	1.180	1.100	.8800	1.76	1.408	1.930	1.5440	2.2750	1.82
91	1.510	1.208	1.126	.9008	1.80	1.440	1.976	1.5808	2.3125	1.85
92	1.545	1.236	1.152	.9216	1.84	1.472	2.022	1.6176	2.3500	1.88
93	1.580	1.264	1.178	.9424	1.88	1.504	2.068	1.6544	2.3875	1.91
94	1.615	1.292	1.204	.9632	1.92	1.536	2.114	1.6912	2.4250	1.94
95	1.650	1.320	1.230	.9840	1.96	1.568	2.160	1.7280	2.4625	1.97
96	1.685	1.348	1.256	1.0048	2.00	1.600	2.206	1.7648	2.5000	2.00
97	1.720	1.376	1.282	1.0256	2.04	1.632	2.252	1.8016	2.5375	2.03
98	1.755	1.404	1.308	1.0464	2.08	1.664	2.298	1.8384	2.5750	2.06
99	2/1.900	2/1.520	1.334	1.0672	2.12	1.696	2.344	1.8752	2.6125	2.09
100	1.900	1.520	1.360	1.0880	2.16	1.728	2.390	1.9120	2.6500	2.12

1/ The increment on each sugar degree above 75 is shown on page 28.

2/ Sugar above No. 16 Dutch standard in color and all sugar which had gone through a process of refining was dutiable under the Act of 1909 at 1.90 cents per pound. (Cuban duty 1.52 cents per pound).

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Table 21. - Sugar: Comparison of the revenue from total dutiable imports with the revenue from dutiable sugar and the effect upon the equivalent ad valorem rate of duty of changes in the price of imported sugar

Fiscal years 1910-1918; calendar years, 1919 and succeeding years	Revenue from dutiable imports			Equivalent ad valorem rate		Average unit value of imports of dutiable sugar	Rate of duty on 96° Cuban sugar	Equivalent ad valorem of the rates on all dutiable imports except sugar
	Total	Sugar	Percent of total revenue supplied by sugar	On total dutiable imports	On imports of dutiable sugar			
	In thousands	In thousands		Percent	Percent	Cents per lb.	Cents per lb.	Percent
Payne-Aldrich Law								
Effective Aug. 6, 1909							Act of 1909	
1910	$326,263	$52,738	16.2	41.5	52.8	2.56		39.9
1911	309,582	52,446	16.9	41.2	54.4	2.47	1.348	39.3
1912	304,597	50,535	16.6	40.1	48.5	2.81		38.8
1913	312,252	53,086	17.0	40.0	59.2	2.26		37.6
Annual average - Payne-Aldrich Law	313,174	52,201	16.7	40.7	53.5	2.52		38.9
Underwood Law								
Effective Oct. 4, 1913								
1914	283,512	61,440	21.7	37.6	58.0	2.00		34.3
1915	205,755	49,244	23.9	33.4	31.8	3.14	Act of 1913	34.0
1916	209,523	55,275	26.4	30.7	27.5	3.67		32.0
1917	221,448	53,971	24.4	27.2	23.3	4.37		28.7
1918	180,197	47,781	26.5	24.1	20.8	4.84	1.0048	25.6
1918 (July - Dec.)	73,907	17,572	23.8	24.4	21.6	4.69		25.4
1919	237,403	67,909	28.6	21.3	17.8	5.61		23.1
1920	325,635	78,663	24.2	16.4	8.6	12.38		23.1
1921 1/	292,359	70,837	24.2	29.4	30.7	4.14	Emergency Tariff	29.1
1922 1/	451,356	147,444	32.7	38.1	64.0	2.52	1.600	31.8
Annual average - Underwood Law	261,168	68,435	26.2	27.0	23.5	4.90		28.5
Fordney-McCumber Law								
Effective Sept. 22, 1922								
1923	566,664	127,475	22.5	36.2	36.6	4.86		36.1
1924	532,286	135,099	25.4	36.5	41.3	4.27		35.2
1925	551,814	138,011	25.0	37.6	68.6	2.56	Act of 1922	32.7
1926	590,038	145,428	24.6	39.3	75.4	2.33		34.0
1927	574,839	130,044	22.6	38.8	61.7	2.85	1.7648	35.0
1928	542,270	117,154	21.6	38.8	72.6	2.43		34.3
1929	584,772	129,526	22.1	40.1	93.7	1.89		34.5
1930 (Jan.1 - June 17)	269,359	69,377	25.8	44.6	99.5	1.79		37.4
Annual average - Fordney-McCumber Law	561,606	132,282	23.6	38.5	60.1	2.93		34.7
Hawley-Smoot Law								
Effective June 18, 1930							Act of 1930	
1930 (June 18-Dec.31)	192,528	45,766	23.8	44.8	163.2	1.23		36.6
1931	370,771	98,455	26.6	53.2	152.5	1.32	2.000	43.1
1932	254,201	74,213	29.2	57.7	192.9	1.05		44.8

Source: Compiled from current years of Foreign Commerce and Navigation of the United States.

1/ The Emergency Tariff Act became effective on certain agricultural products on May 28, 1921, and continued in effect until September 22, 1922.

Table 21a.- Sugar: Computed duty on United States imports of sugar, drawback paid, and net revenue, 1923 to 1931, inclusive

Year	Duty computed	Drawback paid 1/	Net revenue
	In millions of dollars		
1931	98.5	4.4	94.1
1930	115.1	3.3	111.8
1929	129.5	5.8	123.7
1928	117.2	4.6	112.6
1927	130.0	5.7	124.3
1926	145.4	5.7	139.7
1925	138.0	14.4	123.6
1924	135.1	9.0	126.1
1923	127.5	9.4	118.1
Total	1,136.3	62.3	1,074.0
9-year average	126.3	6.9	119.4

1/ For details of drawback paid, see table 24.

Table 22. - Sugar: Domestic exports of refined sugar from the United States

	Short tons	Value
Fiscal year ending June 30		
1910	62,726	$5,396,009
1911	27,474	2,244,379
1912	39,797	3,681,072
1913	21,997	1,681,302
1914	25,448	1,839,983
1915	274,504	25,615,016
1916	815,075	79,390,147
1917	624,454	77,093,685
Calendar year		
1918	203,648	27,038,667
1919	737,704	114,737,491
1920	462,096	94,877,045
1921	466,896	48,826,890
1922	918,361	69,679,829
1923	222,458	28,933,391
1924	220,248	24,027,807
1925	379,358	28,159,672
1926	106,893	7,569,824
1927	125,323	10,311,368
1928	122,587	8,548,341
1929	102,639	6,103,951
1930	77,814	3,807,050
1931	52,577	2,238,307
1932	49,004	1,551,386

Source: Foreign Commerce and Navigation of the United States.

Table 23. - Sugar: Comparison of total quantity exported with quantity on which drawbacks were paid, 1925 to 1931, inclusive

(Short tons)

Year	Quantity of refined sugar exported (Refined sugar weights)	Quantity of sugar on which drawbacks were paid (Raw sugar weights chiefly)		
		As sugar	In manufactured products	Total
1931	52,578	77,518	30,551	108,069
1930	77,813	51,918	39,511	91,429
1929	102,639	125,478	36,987	162,465
1928	122,587	101,808	31,530	133,338
1927	125,323	135,359	27,862	163,221
1926	106,893	135,429	26,183	161,612
1925	379,358	384,228	23,465	407,693
Total	967,191	1,011,738	216,089	1,227,827

States, 1922 to 1931, inclusive

drawback was paid) contained as ingredient in other manufactured products						
	Miscellaneous foodstuffs, beverages, extracts, etc.	Industrial chemicals	Medicines, pharmaceuticals	Tobacco - Plug, smoking, and cigarettes	Other inedible vegetable products	Miscellaneous
5:	346,025	6,962,052:	575,885:	-	-	-
4:	398,983	1,551,760:	523,129:	-	-	-
3:	886,560	-	797,482:	-	70,538	-
1:	293,983	2,720:	603,005:	-	-	-
5:	339,290	2,662:	730,001:	-	-	-
9:	452,963	1,703,859:	645,900:	-	14,108	-
76:	671,458	10,547:	862,002:	-	-	-
46:	102,607	1,226:	785,363:	66,290	-	-
21:	263,540	-	779,058:	-	-	-
97:	10,834	-	755,075:	-	-	-
29:	12,320	-	1,162,546:	5,584	-	1,080
74:	212,272	2,355:	868,809:	14,375	-	216
99:	$6,776	$139,330:	$10,525:	-	-	-
72:	7,058	27,321:	9,355:	-	-	-
37:	10,851	-	14,152:	-	$1,254	-
99:	5,345	137:	12,093:	-	-	-
89:	5,909	47:	13,129:	-	-	-
19:	7,188	33,367:	11,851:	-	[illegible]	[illegible]
05:	11,362	185:	15,256:	-	-	-
22:	1,790	17:	13,736:	$261	-	-
07:	4,312	-	13,591:	-	-	-
23:	191	-	12,550:	-	-	-
55:	1,2	-	16,928:	62	-	$11
62:	3,556	40:	14,244:	65	-	8

Table 24. - Sugar: Details of drawbacks paid upon dutiable imported sugar which was subsequently exported from the United States, 1922 to 1931, inclusive

Year	Total sugar contained in all products, exported with drawback	Sugar contained in exports of sugar and related products: Total sugar and related products	Sugar	Sirups	Molasses	Confectionery	Chewing gum	Mush and invert sugar	Cocoa and chocolate	Sugar (on which drawback was paid) contained as ingredient in other manufactured products: Canned goods: Fruits	Canned goods: All other	Dairy products: Milk and cream	Dairy products: All other	Miscellaneous foodstuffs, beverages, extracts, etc.	Industrial chemicals	Medicines, pharmaceuticals	Tobacco - Plug, smoking, and cigarettes	Other inedible vegetable products	Miscellaneous
Quantity of sugar - in pounds																			
1931	216,137,599	181,981,331	155,035,296	8,527,849	15,796,446	3,576,445	995,562	42,508	7,225	19,521,490	827,716	6,026,393	96,705	346,025	6,962,052	575,885	-	-	-
1930	182,858,101	143,895,284	103,835,416	17,239,850	18,677,246	3,457,885	660,289	-	24,598	22,788,674	1,143,711	12,468,556	88,004	398,983	1,551,760	523,129	-	-	-
1929	324,930,286	285,701,399	250,955,402	22,902,148	6,839,310	3,552,910	1,391,429	-	-	21,419,126	1,261,238	14,774,725	19,218	886,560	-	797,482	-	70,538	-
1928	266,675,911	230,868,437	203,615,778	12,222,626	9,819,649	3,891,671	1,315,016	3,297	-	18,625,360	1,213,099	15,046,560	22,941	293,983	2,720	603,005	-	-	-
1927	320,445,379	291,360,774	272,747,507	12,580,388	2,004,889	4,097,056	1,873,259	1,597	-	14,457,529	1,228,704	14,715,234	3,608,175	339,790	2,662	730,001	-	-	-
5-year average	262,409,055	230,361,175	211,038,161	14,494,572	10,655,508	3,715,193	1,247,111	9,480	6,365	19,362,437	1,094,894	12,606,293	765,009	457,064	1,704,879	645,900	-	14,108	-
1926	323,223,702	294,250,691	270,858,135	15,254,166	2,885,817	2,207,749	3,041,634	3,190	-	12,618,962	809,234	13,944,732	56,076	671,458	10,547	862,006	-	-	-
1925	815,386,735	705,237,082	708,456,727	11,807,165	353,397	2,318,307	2,305,486	-	-	9,342,180	251,780	19,570,253	29,946	102,607	1,226	785,363	66,290	-	-
1924	509,477,573	475,048,559	464,971,173	4,960,090	512,668	1,538,421	3,006,207	-	-	9,581,233	529,304	23,206,664	69,221	263,540	-	779,059	-	-	-
1923	552,736,609	513,925,450	513,021,078	5,075,178	-	1,458,058	1,530,241	-	-	5,851,949	-	19,034,984	158,397	10,834	-	755,075	-	-	-
1922	2,166,650,003	816,720,437	2,120,536,570	4,304,210	-	2,207,078	1,513,570	-	-	3,368,773	-	27,147,128	203,720	12,300	-	1,162,546	5,584	-	1,080
5-year average	873,494,924	561,236,644	815,969,617	8,280,362	751,376	1,865,943	2,291,627	638	-	8,152,619	318,065	20,580,752	103,472	212,148	2,395	868,810	14,375	-	216
Amount of drawback																			
1931	$4,331,887	$3,674,966	$3,149,506	$174,501	$262,566	$69,008	$18,188	$850	$129	$422,217	$11,364	$124,910	$1,799	$6,776	$139,330	$10,525	-	-	-
1930	3,340,968	2,592,068	1,880,254	305,524	338,782	61,130	11,760	-	438	454,901	20,262	227,031	1,572	7,058	27,321	9,355	-	-	-
1929	5,768,820	5,013,595	4,406,080	401,570	121,739	62,568	24,638	-	-	436,009	23,092	269,530	337	10,051	-	14,152	-	$1,254	-
1928	4,631,547	3,963,414	3,500,191	206,187	165,231	67,919	23,087	59	-	366,854	16,994	266,341	399	5,345	127	12,003	-	-	-
1927	5,777,801	5,180,54	4,770,152	220,555	34,430	71,510	32,704	28	-	302,620	21,470	255,526	4,489	5,9	47	13,199	-	-	-
5-year average	4,770,405	4,070,[illegible]	3,541,445	261,[illegible]	184,[illegible]	66,431	22,[illegible]	187	113	396,[illegible]	18,[illegible]	228,[illegible]	1,[illegible]	7,[illegible]	13,367	11,[illegible]	-	[illegible]	[illegible]
1926	5,750,095	5,155,492	4,748,723	286,854	49,328	39,076	53,855	56	-	285,134	14,649	247,012	1,005	11,362	185	15,256	-	-	-
1925	14,375,241	13,795,398	13,523,449	191,505	6,207	34,168	40,769	-	-	209,197	4,436	348,584	522	1,790	17	13,736	$261	-	-
1924	9,001,446	8,372,728	8,101,344	84,891	9,034	27,027	50,502	-	-	196,438	9,460	403,710	1,207	4,312	-	13,591	-	-	-
1923	9,380,362	8,953,035	8,804,144	97,756	-	24,001	27,730	-	-	107,079	-	313,206	2,823	191	-	12,550	-	-	-
1922	38,775,803	33,[illegible]	[illegible]	[illegible]	-	31,579	15,[illegible]	-	-	46,765	-	340,[illegible]	2,955	[illegible]	-	[illegible]	62	-	$1
5-year average	14,[illegible]	13,[illegible]	1,[illegible]	14[illegible]	13,[illegible]	31,170	37,[illegible]	11	-	166,[illegible]	5,703	330,[illegible]	1,662	[illegible]	46	[illegible]	65	-	[illegible]

Source: Foreign Commerce and Navigation of the United States.

PRICES

Table 24a. - Sugar: Price quotations (insular yearly averages), with margins between 96° and fine granulated sugar, in New York market. Yearly averages 1908 to 1932, inclusive

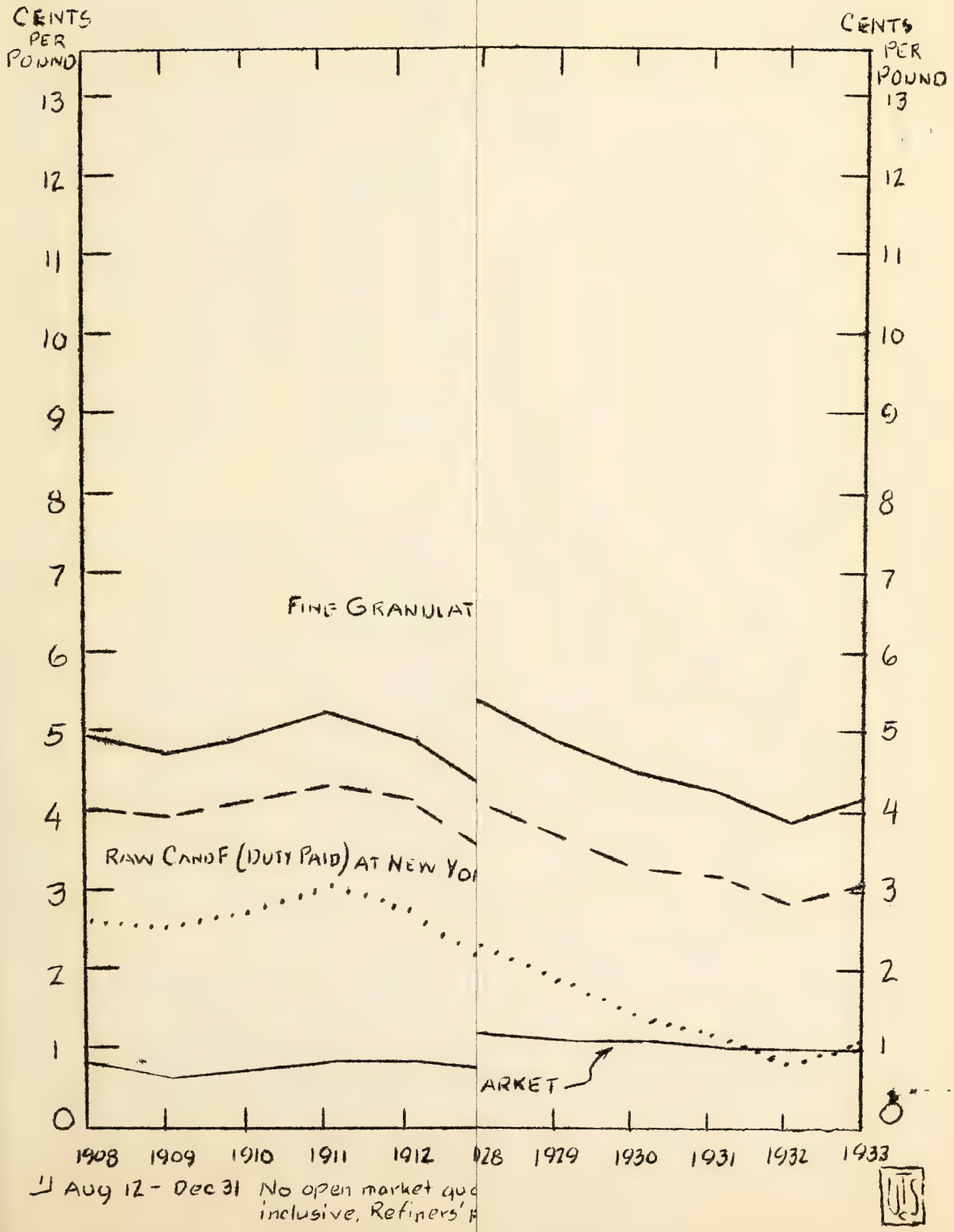
(In cents per pound)

Year	96° centrifugal sugar: C. & f. prompt shipment - net cash (ex duty)	96° centrifugal sugar: Duty paid at New York	Fine granulated f.o.b. New York net cash	Margin between raw and granulated in New York market
1908	2.713	4.073	4.957	0.884
1909	2.646	4.007	4.765	.758
1910	2.828	4.188	4.972	.784
1911	3.090	4.453	5.345	.892
1912	2.804	4.162	5.041	.879
1913	2.150	3.506	4.278	.772
1914	2.745	3.814	4.683	.869
1915	3.626	4.642	5.559	.917
1916	4.767	5.786	6.862	1.076
1917	5.208	6.228	7.663	1.435
1918	5.014	6.447	7.834	1.387
1919	6.354	7.724	9.003	1.279
1920	11.337	12.362	1/11.390	1/
1921	3.459	4.763	6.207	1.444
1922	2.977	4.632	5.904	1.272
1923	5.240	7.020	8.441	1.421
1924	4.186	5.964	7.471	1.507
1925	2.562	4.334	5.483	1.149
1926	2.568	4.337	5.473	1.136
1927	2.959	4.730	5.828	1.098
1928	2.459	4.229	5.540	1.311
1929	2.001	3.769	5.025	1.256
1930	1.499	3.387	4.634	1.247
1931	1.329	3.329	4.425	1.096
1932	.925	2.925	3.992	1.067

Source: Based on yearly averages published in Willett & Gray's Weekly Statistical Sugar Trade Journal.

1/ August 12 to December 31. No open market quotation by refiners from January 1 to August 11, 1920, inclusive. Refiners' product allocated to their regular trade.

CUBAN SUGA 96° AND FINE



1/ Aug 12 - Dec 31 No open market quo
inclusive, Refiners' p

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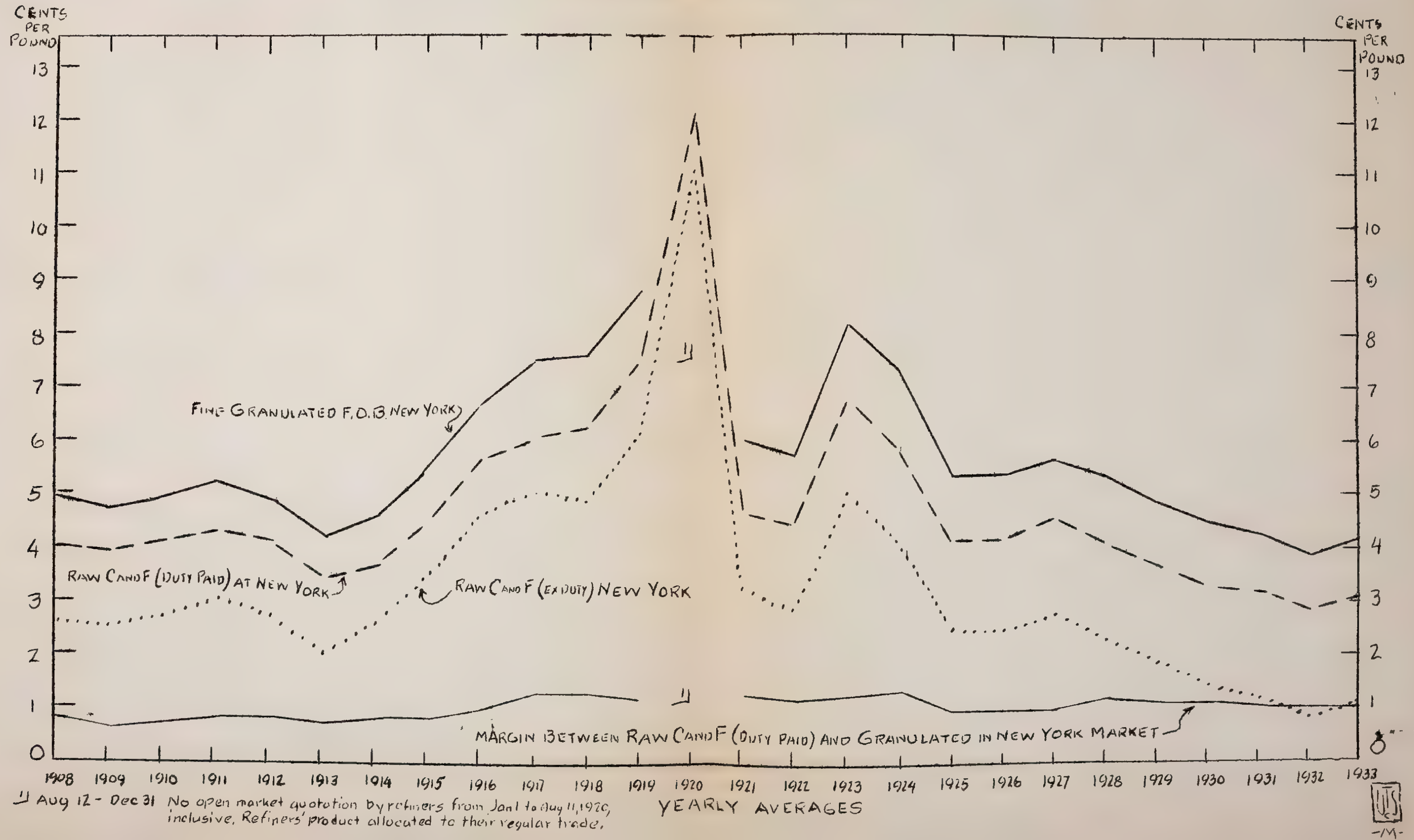
CUBAN SUGAR: PRICE QUOTATIONS, WITH MARGINS BETWEEN 96° AND FINE GRANULATED SUGAR, IN NEW YORK MARKET. YEARLY AVERAGES 1908 TO 1933.



1/ Aug 12 - Dec 31 No open market quotation by refiners from Jan 1 to Aug 11, 1920, inclusive. Refiners' product allocated to their regular trade.

-M-

Table 25. - Sugar: Promedio price of 96 degree centrifugal sugar in public warehouses, Cuba 1/

(Cents per pound)

Month	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
January	2.90	1.92	1.80	2.51	3.10	3.62	4.32	5.04	10.83	3.71	2/
February	3.09	1.87	1.87	2.96	3.42	3.57	4.21	5.04	10.26	4.27	1.67
March	2.93	1.96	1.75	3.40	4.07	3.95	4.21	5.04	10.57	4.41	1.97
April	2.58	1.82	1.74	3.18	4.52	4.58	4.21	5.04	15.08	3.83	2.09
May	2.39	1.74	2.02	3.54	4.92	4.57	4.21	5.04	19.43	3.44	2.14
June	2.30	1.76	2.15	3.65	4.84	4.51	4.16	5.04	18.20	-	2.63
July	2.32	1.92	2.11	3.56	4.96	5.00	4.20	5.04	15.22	2.59	3.21
August	2.49	2.21	4.00	3.37	4.87	5.86	4.20	5.04	10.95	2.83	3.19
September	2.75	2.16	4.31	2.97	4.70	5.42	4.20	5.04	-	2.25	3.33
October	2.52	1.90	3.08	2.80	4.84	5.52	4.20	5.04	6.70	2.11	3.23
November	2.42	2.05	2.71	3.31	4.99	5.48	4.20	5.04	5.15	2.09	3.46
December	2.31	1.69	2.71	3.32	4.05	4.54	-	10.50	3.49	1.90	3.57
Simple average	2.58	1.92	2.52	3.21	4.44	4.72	4.21	5.50	11.44	3.03	2.77

Month	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933 3/
January	3.24	4.47	2.47	2.07	2.97	2.48	1.78	1.74	1.15	0.91	0.54
February	4.49	5.12	2.53	2.68	2.86	2.22	1.68	1.60	1.10	.74	.55
March	5.21	4.83	2.66	2.01	2.73	2.43	1.67	1.60	1.04	.56	.78
April	5.71	4.23	2.41	2.08	2.69	2.39	1.61	1.46	1.11	.49	.88
May	5.89	3.54	2.29	2.12	2.77	2.41	1.54	1.25	1.00	.50	.87
June	5.69	3.04	2.33	2.09	2.60	2.32	1.49	1.13	1.11	.57	1.20
July	4.85	3.03	2.20	2.07	2.48	2.24	1.83	1.05	1.27	.84	
August	4.23	3.26	2.28	2.15	2.46	2.14	1.80	.99	1.20	.88	
September	4.64	3.73	2.19	2.31	2.74	2.04	1.93	.91	1.19	.92	
October	5.58	3.90	1.82	2.43	2.59	1.93	1.97	1.08	1.19	.86	
November	5.10	3.78	1.97	2.56	2.58	1.89	1.71	1.18	1.14	.80	
December	5.17	3.30	1.99	2.98	2.52	1.94	1.71	1.08	1.07	.61	
Simple average	4.98	3.85	2.26	2.30	2.67	2.20	1.73	1.25	1.13	.72	

1/ Data through 1929 are from Industria Azucarera and Revista Azucarera (H.A. Himely). Data for 1930, 1931, and 1932 are based on Cuban decree No. 963, and are taken from "Santa Maria's Report of Cuban Sugar Crop" and from market reports of "Czarnikow - Rionda Company". Figures were averaged from quotations for various Cuban ports.

2/ No sales.

3/ Basic figures from Facts About Sugar

Table 26. - Sugar: Prices of 96 degree centrifugal Cuban sugar on New York market, C&F. 1/ (Prompt)

(Cents per pound)

Month	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
							2/	2/			
Jan.	3.07	2.18	1.99	3.05	3.63	4.22	4.98	5.88	12.00	4.34	2.05
Feb.	3.28	2.14	2.09	3.69	3.92	4.16	4.98	5.88	10.34	4.25	2.14
March	3.11	2.20	2.73	3.76	4.63	5.58	4.98	5.88	10.81	4.95	2.31
April	2.78	2.04	1.98	3.79	5.14	5.19	4.98	5.88	16.60	4.41	2.39
May	2.62	1.97	2.25	3.83	5.41	5.06	4.98	5.88	19.25	3.83	2.44
June	2.53	1.99	2.33	3.89	5.30	5.02	4.98	5.88	18.62	3.43	2.98
July	2.55	2.20	2.27	3.84	5.30	5.02	4.98	5.88	16.50	3.00	3.54
Aug.	2.75	2.39	4.68	3.77	4.56	6.33	4.98	5.88	12.31	3.19	3.56
Sept.	2.95	2.37	4.78	3.26	4.53	5.94	4.98	5.88	9.65	2.93	3.17
Oct.	2.74	2.15	3.48	3.09	5.22	5.87	4.98	5.88	7.25	2.56	3.64
Nov.	2.70	2.27	2.88	3.74	5.19	5.87	4.98	5.88	5.75	2.50	3.83
Dec.	2.60	2.00	2.94	3.81	4.30	5.32	5.21	11.58	4.38	2.11	3.91
Simple aver.	2.81	2.16	2.87	3.63	4.76	5.34	5.00	6.36	11.96	3.46	3.00

(Cents per pound)

Month	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Jan.	3.52	4.94	2.82	2.40	3.28	2.75	2.03	1.99	1.34	1.14	0.72
Feb.	4.38	5.45	2.84	2.45	3.15	2.48	1.95	1.97	1.32	.97	.73
March	5.50	5.12	2.96	2.56	3.02	2.73	1.93	1.82	1.30	.78	.96
April	6.03	4.59	2.67	2.33	3.03	2.69	1.88	1.71	1.30	.63	1.14
May	6.23	3.85	2.54	2.42	4.06	2.72	1.82	1.48	1.16	.60	1.33
June	5.66	3.31	2.64	2.37	2.86	2.56	1.74	1.36	1.27	.70	1.44
July	5.16	3.34	2.51	2.38	2.76	2.45	2.04	1.26	1.48	1.00	1.56
Aug.	4.28	3.61	2.58	2.46	2.74	2.39	2.05	1.19	1.49	1.13	
Sept.	5.19	4.17	2.49	2.66	3.02	2.24	2.19	1.15	1.41	1.16	
Oct.	5.81	4.25	2.01	2.80	2.91	2.16	2.25	1.25	1.42	1.15	
Nov.	5.50	4.03	2.27	2.93	2.88	2.09	1.97	1.39	1.38	1.07	
Dec.	5.53	3.36	2.36	3.33	2.81	2.17	1.98	1.29	1.67	.83	
Simple aver.	5.22	4.17	2.56	2.59	3.04	2.45	1.99	1.49	1.38	.92	

1/ Figures for this table were obtained by averaging weekly quotations given in Willett and Gray's Weekly Statistical Sugar Trade Journal, except for the years 1912 and 1913, which were taken from Czarnikow Rionda Co. leaflets.

2/ Prices under Government control.

Table 27. - Sugar: Prices of fine granulated sugar f.o.b. New York - net cash 1/

(Cents per pound in 100 lb. bags)

Month	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
January -	2/4.51	3.92	4.90	3/5.77	3/6.62	7.64	8.82	4/	7.56	3/4.86	3/6.64
February-	4.17	3.92	5.29	6.05	7.02	7.30	8.82	4/	7.13	5.00	7.44
March ---	4.19	3.77	5.78	6.52	7.60	7.30	8.82	4/	2/7.92	5.21	8.57
April ---	4.09	3/3.71	5.78	7.12	2/8.21	7.30	8.82	4/	7.08	5.19	2/9.18
May -----	4.07	3.92	5.88	2/7.42	7.84	7.30	8.82	4/	6.31	5.32	9.43
June ----	4.21	4.21	5.81	7.33	7.47	7.33	8.82	4/	5.59	5.81	9.19
July ----	4.39	4.24	5.66	7.50	7.63	7.35	8.82	4/	5.55	6.63	8.35
August --	4.61	2/6.21	5.54	7.03	8.18	7.35	8.82	2/16.37	5.83	6.52	7.51
September	4.61	6.55	3/4.87	6.37	8.23	8.09	8.82	13.86	5.50	6.25	8.31
October -	4.20	5.71	5.15	7.05	8.18	8.82	8.82	11.51	5.15	6.55	8.55
November-	4.19	4.93	5.64	7.35	8.18	8.82	8.82	9.39	5.19	2/6.91	8.77
December-	3/4.03	4.82	2/5.90	6.87	7.99	8.82	2/12.87	3/7.85	3/4.87	6.86	8.76
Simple Average	4.26	4.66	5.52	6.87	7.76	7.78	9.16	11.80	6.14	5.93	8.31

Month	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
January -	8.37	2/6.19	5.16	2/6.11	5.66	5.01	2/4.92	4.53	4.08	3.86
February-	2/8.65	5.85	5.16	5.90	5.57	4.90	4.85	4.51	4.07	3.82
March ---	8.33	5.83	3/4.97	5.80	5.62	3/4.75	4.78	4.34	3.98	4.02
April ---	8.06	5.65	5.17	5.83	5.78	4.80	4.77	4.36	3.82	4.21
May -----	7.12	5.47	5.41	6.08	5.88	4.79	4.70	4.27	3.71	4.41
June ----	3/6.48	5.44	5.43	6.03	2/5.83	4.85	4.51	4.34	3/3.73	4.49
July ----	6.50	5.27	5.54	5.81	5.65	2/5.15	4.61	2/4.56	4.00	4.56
August --	6.62	5.34	5.55	3/5.56	5.45	5.39	3/4.42	4.58	4.11	
September	7.18	5.26	5.63	5.78	5.41	5.32	4.30	4.43	4.21	
October -	7.35	3/5.00	5.72	5.68	3/5.16	5.11	4.41	4.46	4.13	
November-	7.24	5.10	2/5.89	5.54	5.07	5.01	4.61	4.41	4.17	
December-	6.84	5.19	6.11	5.59	5.15	4.97	4.53	3/4.15	4.08	
Simple Average	7.40	5.47	5.48	5.81	5.52	5.00	4.62	4.41	4.01	

1/ Basic data from Willett & Gray's Weekly Statistical Sugar Trade Journal. Averaged for months and years.
2/ High point of year was during this month.
3/ Low point of year was during this month.
4/ Nominal. No quotations given by refiners. Refiners disposed of their product to their regular trade.

TRADE OF THE UNITED STATES WITH CUBA, PHILIPPINE ISLANDS, HAWAII, AND PUERTO RICO

Table 28. - Exports of merchandise from the United States to Cuba by commodity groups

Fiscal year 1913; calendar years 1925 to 1932, inclusive

(In thousands)

Commodity groups	1913 1/	1925	1926	1927	1928	1929	1930	1931	1932
Total - all groups	$69,606	$192,513	$156,450	$151,127	$125,024	$125,279	$91,859	$46,240	$28,396
Animals and animal products, edible		44,193	29,147	25,602	21,907	20,347	14,098	6,780	2,655
Animals and animal products, inedible, except wool and hair			8,760	8,123	6,492	5,626	3,882	1,836	1,205
Vegetable food products and beverages		27,782	22,487	21,498	16,591	15,529	10,660	6,561	4,846
Other vegetable products, except fibers and wood		3,760	4,228	4,547	4,227	5,060	3,891	1,957	1,062
Textiles		21,085	20,009	19,326	17,305	18,377	14,302	8,720	6,775
Wood and paper		11,950	8,858	8,622	6,499	7,092	4,819	2,690	1,714
Nonmetallic minerals		16,565	13,925	14,169	13,605	13,499	13,204	5,747	3,183
Metals and manufactures, except machinery and vehicles		21,578	14,453	13,981	10,712	11,499	7,481	3,018	1,734
Machinery and vehicles		31,404	20,499	22,363	17,541	18,028	11,629	4,900	2,282
Chemicals and related products		10,059	9,244	8,249	6,300	6,234	4,902	2,548	1,933
Miscellaneous		4,137	4,840	4,647	3,845	3,988	2,991	1,483	1,007

Source: Foreign Commerce and Navigation of the United States.

1/ Detail not available by commodity groups.

Table 29. - Imports of merchandise into the United States from Cuba, by commodity groups

Fiscal year 1913; calendar years 1925-1932, inclusive

(In thousands)

Commodity groups	1913 1/	1925	1926	1927	1928	1929	1930	1931	1932
Total - all groups	$126,088	$261,672	$250,600	$256,785	$202,842	$207,421	$121,949	$90,059	$58,330
Animals and animal products, edible		1,436	30	26	98	195	214	55	17
Animals and animal products, inedible, except wool and hair			1,023	1,369	1,879	1,788	1,433	852	444
Vegetable food products and beverages		223,046	213,395	222,274	170,645	175,413	95,454	71,553	46,929
Sugar	93,704	199,780	198,895	207,621	157,079	157,601	75,733	61,247	38,293
Other vegetable products, except fibers and wood		27,453	26,680	24,566	24,113	23,047	19,062	13,484	8,236
Textiles		520	935	428	496	656	752	729	433
Wood and paper		349	243	160	288	227	168	54	59
Nonmetallic minerals		142	601	55	213	236	224	300	145
Metals and manufactures, except machinery and vehicles		7,040	5,432	5,716	3,580	4,588	3,391	1,936	1,234
Machinery and vehicles		16	70	72	17	8	3	28	43
Chemicals and related products		137	312	357	238	223	181	184	129
Miscellaneous		1,533	1,879	1,762	1,275	1,040	1,067	884	661

Source: Foreign Commerce and Navigation of the United States.

1/ Detail not available by commodity groups.

Table 30. - Exports of merchandise from the United States to the Philippine Islands, by commodity groups

Fiscal year 1913; calendar years 1925 to 1932, inclusive

(In thousands)

Commodity groups	1913 1/	1925	1926	1927	1928	1929	1930	1931	1932
Total - all groups	$25,361	$60,946	$68,523	$69,394	$79,648	$85,414	$64,816	$48,805	$44,870
Animals and animal products, edible			5,186	5,125	5,396	5,956	5,059	4,015	
Animals and animal products, inedible, except wool and hair		6,522	1,500	1,556	1,660	1,637	1,380	927	3,573
Vegetable food products and beverages		6,519	6,564	6,322	7,379	7,889	6,158	4,822	3,628
Other vegetable products, except fibers and wood		3,965	4,540	5,116	6,016	6,872	5,662	4,427	3,645
Textiles		14,854	17,200	15,408	16,059	14,617	8,945	8,719	11,517
Wood and paper		2,823	1,748	1,741	1,878	2,320	1,929	1,697	1,272
Nonmetallic minerals		6,005	6,948	5,883	7,890	8,433	6,680	4,490	4,462
Metals and manufactures, except machinery and vehicles		6,715	7,743	8,160	9,673	11,407	8,940	5,678	4,578
Machinery and vehicles		8,459	9,524	11,478	14,726	15,545	11,628	7,766	6,901
Chemicals and related products		3,570	4,225	4,745	4,931	6,002	4,500	3,717	2,975
Miscellaneous		1,514	3,345	3,860	4,040	4,736	3,935	2,547	2,319

Source: Foreign Commerce and Navigation of the United States.

1/ Detail by commodity group not available.

Table 3[illegible] - Imports of merchandise into the United States from the Philippine Islands, by commodity groups

Fiscal year 1913; calendar years 1925 to 1932, inclusive

(In thousands)

Commodity groups	1913 1/	1925	1926	1927	1928	1929	1930	1931	1932
Total - all groups	$21,010	$111,820	$103,797	$115,981	$115,609	$125,792	$109,389	$87,134	$80,877
Animals and animal products, edible	)	)	46	2/	16	29	22	26	)
Animals and animal products, inedible, except wool and hair	)	84	38	39	55	60	213	110	) 76
Vegetable food products and beverages		78,625	32,725	51,072	51,402	53,589	55,511	52,511	59,336
Sugar	1,564	41,417	29,162	47,887	45,691	52,154	52,039	48,899	57,122
Other vegetable products, except fibers and wood		5,471	41,683	42,705	44,765	47,014	36,488	25,909	14,800
Textiles		25,100	26,948	18,912	16,522	22,327	14,468	6,653	5,604
Wood and paper		1,613	1,475	2,074	1,854	1,855	1,610	960	285
Nonmetallic minerals		2/	2/	3	2/	1	1	2/	1
Metals and manufactures, except machinery and vehicles		64	1	8	2/	4	2	1	2/
Machinery and vehicles		-	2	2	2/	3	1	2/	1
Chemicals and related products		3	23	-	28	26	26	65	44
Miscellaneous		860	856	1,166	967	884	1,047	900	730

Source: Foreign Commerce and Navigation of the United States.

1/ Detail by commodity group not available.

2/ Less than $500.

Table 32. - Shipments of merchandise from the United States to Hawaii, by commodity groups, and total shipments into the United States from Hawaii

Fiscal year 1913; calendar years 1925 to 1932, inclusive

(In thousands)

Commodity groups	1913 1/	1925	1926	1927	1928	1929	1930	1931	1932
Shipments of merchandise from the United States to Hawaii									
Total - all groups	$29,753	$72,924	$76,263	$79,630	$77,763	$82,951	$81,726	$79,092	$58,504
Animals and animal products, edible		4,744	4,765	5,133	5,546	5,736	5,852	5,748	4,804
Animals and animal products, inedible, except wool and hair		1,370	1,193	1,378	1,365	1,486	1,305	1,180	987
Vegetable food products and beverages		11,426	11,923	12,017	11,649	12,189	12,716	11,179	9,112
Other vegetable products, except fibers and wood		4,300	4,319	4,709	4,494	4,916	4,982	5,010	4,312
Textiles		6,480	7,519	7,602	6,827	6,992	6,401	6,001	4,656
Wood and paper		6,252	6,222	6,273	6,173	6,988	6,130	5,350	3,664
Nonmetallic minerals		9,527	10,685	11,020	9,667	10,785	10,762	9,393	8,218
Metals and manufactures, except machinery and vehicles		11,679	11,041	10,737	10,278	11,026	11,855	11,081	6,478
Machinery and vehicles		9,521	9,467	11,843	11,482	12,034	10,833	13,482	7,080
Chemicals and related products		4,589	5,136	4,857	5,270	5,902	6,123	6,087	5,218
Miscellaneous		3,036	3,993	4,061	5,012	4,897	4,767	4,581	3,975
Shipments of merchandise into the United States from Hawaii									
Total - All groups 1/	40,144	99,748	95,294	106,370	114,155	103,797	96,519	98,882	80,494
Sugar	34,447	63,300	59,043	69,828	72,036	61,915	55,233	60,765	57,589

Source: Monthly summary of Foreign Commerce of the United States. Does not include exports of foreign merchandise nor products of the United States returned.

1/ Detail of shipments by commodity groups not available.

Table 33. - Shipments of merchandise from the United States to Puerto Rico, by commodity groups, and total shipments into the United States from Puerto Rico

Fiscal year 1913; calendar years 1925 to 1932, inclusive

(In thousands)

Commodity groups	1913 1/	1925	1926	1927	1928	1929	1930	1931	1932
	Shipments of merchandise from the United States to Puerto Rico								
Total - all groups	$32,867	$77,500	$84,738	$86,327	$81,940	$75,980	$74,219	$60,637	$48,780
Animals and animal products, edible		10,041	10,783	9,839	8,752	8,220	7,236	6,626	5,420
Animals and animal products, inedible except wool and hair		3,419	3,286	3,987	3,575	3,293	2,957	2,478	2,266
Vegetable food products and beverages		18,115	20,763	19,178	18,405	17,770	17,595	13,263	10,663
Other vegetable products, except fibers and wood		2,980	3,731	4,347	4,767	4,668	5,913	4,691	3,806
Textiles		14,308	15,114	16,049	14,988	14,419	15,306	12,913	10,004
Wood and paper		5,115	5,983	5,324	5,182	4,453	3,595	3,231	2,841
Nonmetallic minerals		4,409	4,571	4,558	4,332	3,947	3,783	2,704	2,218
Metals and manufactures, except machinery and vehicles		5,147	5,212	6,070	6,285	5,015	4,052	3,174	2,985
Machinery and vehicles		6,154	6,268	7,770	7,051	5,365	4,906	4,025	3,006
Chemicals and related products		5,846	6,591	6,428	5,843	6,077	6,400	5,278	3,717
Miscellaneous		1,966	2,436	2,777	2,760	2,753	2,476	2,254	1,854
	Shipments of merchandise into the United States from Puerto Rico								
Total - all groups 1/	39,637	91,282	88,872	95,677	95,035	76,002	98,581	86,922	73,594
Sugar	25,655	53,713	46,530	55,337	59,574	36,494	57,391	51,887	51,864

Source: Monthly Summary of Foreign Commerce of the United States. Does not include exports of foreign merchandise nor products of the United States returned.

1/ Detail of shipments by commodity groups not available.

APPENDIX II

DETAILED COST DATA, CHARTS, AND MAPS

(Charts and maps will appear in report when printed)

APPENDIX II

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Charts and Maps

(Charts and maps will appear in the report when printed)

Table 1. - Sugar beets: Number of farms, acreage, and production covered by the cost inquiry in the United States

Areas	1930					1931				
	Number of farms	Total acreage: Planted	Total acreage: Harvested	Production - Tons harvested	Yield per acre for acreage harvested	Number of farms	Total acreage: Planted	Total acreage: Harvested	Production - Tons harvested	Yield per acre for acreage harvested
Michigan -	95	1,431	1,417	10,934		99	1,587	1,561	16,895	
Sebewaing	24	407	395	2,750	8.21	25	465	462	5,081	11.31
Blissfield	25	636	636	4,799	7.84	25	637	617	6,782	11.05
St. Louis	24	252	252	2,296	9.11	24	258	256	2,807	10.80
Bay City	22	136	134	1,089	8.57	25	227	226	2,285	10.27
Minnesota -	48	2,086	1,904	17,537		49	2,710	2,614	24,658	
Chaska	25	726	726	7,389	10.42	25	848	818	9,271	10.87
E. Grand Forks	23	1,360	1,178	10,148	7.99	24	1,862	1,816	15,387	8.44
South Dakota -										
Belle Fourche	24	841	834	10,674	12.89	24	706	666	7,184	10.28
Colorado -	209	7,336	7,319	109,966		209	7,445	7,302	90,850	
Fort Collins	27	1,167	1,166	18,141	15.43	27	1,147	1,147	14,843	13.19
Greeley	25	857	857	14,011	16.81	25	881	824	9,374	11.52
Longmont	24	630	614	9,365	14.94	25	646	646	8,130	12.57
Fort Morgan	25	1,108	1,108	17,186	15.38	25	1,010	1,010	13,005	13.12
Sterling	24	1,077	1,077	14,798	13.85	24	1,064	1,048	11,859	10.98
Brighton	25	942	942	14,578	15.33	25	1,007	945	12,946	13.80
Rocky Ford	27	942	942	14,514	15.45	27	1,050	1,045	11,477	10.52
Delta	32	613	613	7,373	11.68	31	640	627	9,216	14.71
Nebraska -	126	5,951	5,942	84,220		127	5,705	5,441	72,219	
Grand Island	32	1,337	1,337	16,411	11.92	32	1,504	1,479	14,296	9.85
Scottsbluff	94	4,614	4,605	67,819	14.68	95	4,201	3,962	57,923	14.67
Kansas -										
Garden City	22	1,353	1,301	14,813	11.85	25	1,564	1,418	13,171	9.09
Wyoming -	77	3,242	3,203	50,837		77	3,557	3,484	45,826	
Torrington	26	1,261	1,246	19,958	16.00	25	1,213	1,197	16,271	13.68
Lovell	25	1,045	1,045	16,894	15.84	25	1,073	1,062	14,228	13.33
Worland	26	936	912	13,985	15.03	27	1,271	1,225	15,327	12.53
Utah -	128	2,061	2,047	29,643		129	2,111	2,044	21,605	
Gunnison	26	430	428	5,198	12.16	26	407	395	2,737	6.67
Spanish Forks	25	288	284	4,457	15.24	26	324	306	3,602	11.78
Layton	26	338	336	5,935	17.64	26	380	364	4,248	11.71
Logan	26	586	586	8,481	13.86	26	580	580	6,623	11.11
Garland	25	419	413	5,572	12.98	25	420	418	4,395	9.93
Idaho -	50	975	967	11,403		48	944	868	8,394	
Idaho Falls	24	541	541	6,820	12.31	25	602	526	5,714	11.07
Burley	26	434	426	4,583	10.67	23	342	282	2,680	9.51
Montana -	72	3,336	3,303	48,266		75	3,889	3,774	48,279	
Missoula	20	1,135	1,102	16,783	13.89	22	1,240	1,216	16,076	11.94
Billings	25	942	942	14,112	14.82	26	1,224	1,198	15,148	12.62
Sidney	27	1,259	1,259	17,371	13.74	27	1,425	1,360	17,055	12.12
California -	52	9,690	9,690	140,151		65	12,867	12,809	181,103	
Oxnard	19	1,240	1,240	18,057	15.20	27	1,929	1,808	25,030	14.01
Sacramento Delta	33	8,450	8,450	122,094	16.40	38	10,938	10,991	156,073	14.91
Total	903	38,302	37,927	528,454		927	43,085	42,001	530,184	

Note: The yield per acre is a simple average of the yields on the farms covered. All yields are based on acres harvested.

y the

Areas	Prepara-tion and planting	Cultiva-tion	ut	Land charge	Total net cost per acre	Total net cost per ton	Yield per acre
			e				Tons
Michigan -							
Sebewaing	$7.00	$4.45	35	$5.78	$60.13	$5.32	11.31
Blissfield	6.88	4.15	06	5.78	58.84	5.33	11.05
St. Louis	6.35	5.66	06	6.73	59.79	5.54	10.80
Bay City	6.67	5.14	94	4.29	54.23	5.28	10.27
Minnesota -							
Chaska	6.29	5.06	49	4.40	54.89	5.05	10.87
East Grand Forks	6.34	3.90					

Table 3. - Sugar beets: Farm cost of production in areas in the United States covered by the Commission's investigation

1931

Areas	Per Acre														Total net cost per ton	Yield per acre
	Preparation and planting	Cultivation	Irrigation	Thinning, hoeing, and topping	Harvesting	Manure	Fertilizer	Seed	Taxes	Other expenses	Gross cost without land charge	Credits	Net cost without land charge	Land charge	Total net cost per acre	
																Tons
Michigan -																
Sebewaing	$7.00	$4.45	-	$18.85	$13.51	$4.24	$3.00	$2.43	$1.52	$0.76	$55.76	$1.41	$54.35	$5.78	$60.13	$5.32	11.31
Blissfield	6.88	4.15	-	17.55	11.50	5.46	3.14	2.44	2.18	.94	54.24	1.18	53.06	5.78	58.84	5.33	11.05
St. Louis	6.35	5.66	-	18.22	13.44	2.73	2.66	2.40	2.20	.94	54.60	1.54	53.06	6.73	59.79	5.54	10.80
Bay City	6.67	5.14	-	16.36	11.50	4.15	3.13	2.22	1.37	.80	51.34	1.40	49.94	4.29	54.23	5.28	10.27
Minnesota -																
Chaska	6.29	5.06	-	23.18	9.89	3.65	.91	2.93	1.09	.13	53.13	2.64	50.49	4.40	54.89	5.05	10.87
East Grand Forks	6.34	3.90	-	21.39	6.85	1.30	2.04	3.51	.90	1.57	47.80	3.16	44.64	2.89	47.53	5.63	8.44
South Dakota -																
Belle Fourche	7.69	4.45	$6.46	20.58	9.99	7.97	.81	3.41	2.39	1.24	64.99	4.08	60.91	4.95	65.86	6.41	10.28
Colorado -																
Fort Collins	7.71	3.75	7.18	21.70	10.51	5.95	2.88	2.98	2.04	.76	65.46	2.97	62.49	7.14	69.63	5.28	13.19
Greeley	6.23	3.79	7.53	20.73	10.41	5.30	1.07	3.34	1.53	.92	60.85	2.16	58.69	6.24	64.93	5.64	11.52
Longmont	7.66	4.32	7.00	21.96	10.88	8.24	.74	3.07	2.10	.62	66.59	2.46	64.13	9.17	73.30	5.83	12.57
Fort Morgan	7.41	4.11	7.36	19.95	10.14	5.42	1.53	3.06	1.60	.88	61.46	2.93	58.53	7.12	65.65	5.01	13.12
Sterling	7.27	3.97	5.37	19.86	9.13	6.07	.84	3.27	1.33	1.06	58.17	2.69	55.48	7.04	62.52	5.69	10.98
Brighton	7.71	4.01	6.93	21.73	10.65	4.70	.70	3.31	1.84	.85	62.43	3.13	59.30	7.85	67.15	4.86	13.80
Rocky Ford	9.13	4.16	7.55	18.05	8.58	5.98	1.22	2.80	2.18	1.34	60.99	3.97	57.02	8.41	65.43	6.22	10.52
Delta	9.50	5.08	11.47	21.80	12.19	8.16	1.89	2.69	2.34	.80	75.92	5.55	70.37	7.23	77.60	5.27	14.71
Nebraska -																
Grand Island	5.95	3.29	3.97	19.35	7.90	1.11	1.30	2.88	1.62	.38	47.75	2.29	45.46	5.92	51.38	5.21	9.85
Scottsbluff	7.15	4.10	7.08	21.52	10.40	6.90	1.32	3.42	1.51	.64	64.04	3.00	61.04	6.81	67.85	4.63	14.67
Kansas -																
Garden City	7.97	3.37	6.23	18.47	7.42	1.18	.34	3.43	1.68	.73	50.82	2.84	47.98	5.84	53.82	5.92	9.09
Wyoming -																
Torrington	6.91	3.70	6.07	21.15	12.31	5.79	1.33	3.16	1.67	.82	62.91	2.73	60.18	5.31	65.49	4.79	13.68
Lovell	8.47	4.68	5.65	23.16	15.39	6.93	3.91	3.94	2.82	1.67	75.62	4.65	70.97	5.54	76.51	5.74	13.33
Worland	8.90	5.37	6.58	21.93	12.58	4.64	2.04	2.67	3.14	2.02	69.87	3.03	66.84	6.65	73.49	5.87	12.53
Utah -																
Cunnison	9.24	5.92	11.90	15.87	7.33	16.37	2.53	3.07	2.76	1.28	76.27	2.32	73.95	8.67	82.62	12.39	6.67
Spanish Fork	8.56	5.20	8.89	18.66	8.26	12.63	2.99	3.02	3.96	1.54	73.71	2.80	70.91	9.91	80.82	6.86	11.78
Layton	7.35	5.37	17.75	18.20	8.56	7.91	.41	3.10	4.55	.77	73.97	2.00	71.97	17.36	89.33	7.63	11.71
Logan	7.01	4.30	8.71	18.80	9.40	8.31	.95	2.35	3.52	1.55	64.90	2.48	62.42	12.16	74.58	6.71	11.11
Garland	6.23	4.42	7.42	17.47	7.81	7.98	1.86	2.84	2.59	.95	59.57	1.82	57.75	8.95	66.70	6.72	9.93
Idaho -																
Idaho Falls	5.88	4.58	6.08	19.88	9.28	5.80	2.09	3.12	2.18	1.13	60.02	3.94	56.08	8.14	64.22	5.80	11.07
Burley	7.82	5.84	7.93	20.01	8.43	10.98	.87	3.86	3.09	1.74	70.57	2.51	68.06	8.35	76.41	8.03	9.51
Montana -																
Missoula	6.69	4.31	5.40	23.22	10.78	2.57	1.86	2.96	1.62	1.48	60.89	4.15	56.74	6.48	63.22	5.29	11.94
Billings	7.64	5.08	7.84	22.66	12.90	6.54	2.69	3.20	1.58	1.32	71.45	3.71	67.74	8.33	76.07	6.02	12.62
Sidney	6.18	3.80	5.98	21.73	8.94	5.83	2.41	3.12	1.44	.72	60.15	3.81	56.34	4.25	60.59	5.00	12.12
alifornia -																
Oxnard	11.08	4.44	8.28	19.57	13.02	1.57	.17	3.09	9.72	3.12	74.06	3.59	70.47	28.63	99.10	7.07	14.01
Sacramento Delta	7.88	4.02	12.17	23.28	12.62	.01	.36	3.20	4.06	4.86	72.46	2.72	69.74	16.13	85.87	5.76	14.91

Table 4. - Sugar beets: Perc

States	$3.50	$4.00	$4
Irrigated -			
Colorado	1.0	9.8	39
Nebraska	2.8	6.9	28
Kansas	7.9	35.6	45
South Dakota	-	-	9
Wyoming	-	12.4	23
Utah	1.4	5.8	17
Idaho	-	-	28
Montana	-	6.5	30
California	-	1.7	9
Total	1.0	7.1	24
Non-irrigated -			
Michigan	-	-	
Minnesota	-	-	3
Total	-	-	2
All States	0.9	6.7	23
Irrigated -			
Colorado	0.9	6.4	26
Nebraska	4.1	15.0	51
Kansas	-	3.2	14
South Dakota	-	-	
Wyoming	2.1	4.8	15
Utah	-	1.3	11
Idaho	-	4.1	7
Montana	-	2.7	17
California	3.9	12.9	26
Total	2.4	9.1	26
Non-irrigated -			
Michigan	0.7	3.5	9
Minnesota	2.6	5.4	14
Total	1.8	4.6	12
All States	2.4	8.8	25

Table 4. - Sugar beets: Percentage of output which was produced at a cost below specified limits by States

States	Cost per ton less than -												$10.00 or more
	$3.50	$4.00	$4.50	$5.00	$5.50	$6.00	$6.50	$7.00	$7.50	$8.00	$8.50	$9.00	$9.50	$10.00	
1930															
Irrigated -															
Colorado	1.0	9.8	39.8	56.0	76.0	88.5	94.1	96.5	97.7	98.4	98.4	98.5	99.3	99.4	0.6
Nebraska	2.8	6.9	28.2	60.0	80.9	93.6	97.2	98.9	98.9	99.5	99.7	99.7	99.9	99.9	.1
Kansas	7.9	35.6	45.3	60.3	80.8	94.7	94.7	97.4	97.4	98.2	100.0	100.0	100.0	100.0	-
South Dakota	-	-	9.7	42.6	59.0	68.4	83.7	86.7	91.5	91.5	97.1	97.1	97.1	100.0	-
Wyoming	-	12.4	23.8	49.3	73.3	90.8	96.6	98.6	99.2	99.9	99.9	99.9	99.9	99.9	.1
Utah	1.4	5.8	17.7	42.2	53.0	67.4	79.1	83.8	89.2	91.1	93.0	95.6	96.2	96.7	3.3
Idaho	-	-	28.8	34.8	50.5	51.2	61.6	73.5	76.8	90.0	91.4	95.7	95.7	95.7	4.3
Montana	-	6.5	30.6	47.6	67.3	89.7	94.0	98.1	98.6	99.7	99.7	99.7	99.7	99.7	.3
California	-	1.7	9.5	14.2	29.3	44.5	51.4	75.5	76.6	91.0	92.8	94.1	94.1	94.1	5.9
Total	1.0	7.1	24.2	42.0	60.5	75.0	81.1	89.9	91.1	96.0	96.9	97.5	97.8	97.9	2.1
Non-irrigated -															
Michigan	-	-	-	2.3	2.6	7.2	13.8	26.3	44.3	52.4	67.8	79.4	82.5	86.8	13.2
Minnesota	-	-	3.4	13.9	49.7	57.3	71.6	87.9	90.3	92.8	95.2	96.3	98.9	98.9	1.1
Total	-	-	2.1	9.4	31.6	38.0	49.4	64.2	72.6	77.3	84.7	89.8	92.6	94.3	5.7
All States	0.9	6.7	23.0	40.2	58.9	73.0	79.3	88.5	90.1	95.0	96.2	97.1	97.5	97.7	2.3
1931															
Irrigated -															
Colorado	0.9	6.4	26.9	48.2	66.6	75.4	84.0	91.8	93.5	95.5	96.5	97.3	97.9	98.2	1.8
Nebraska	4.1	15.0	51.3	72.8	84.8	90.4	94.4	96.4	97.8	97.8	97.8	97.8	98.6	99.0	1.0
Kansas	-	3.2	14.7	27.2	62.0	81.2	82.2	94.3	94.3	97.0	97.0	97.0	97.0	97.0	3.0
South Dakota	-	-	-	28.0	34.8	53.7	79.9	92.4	96.4	98.2	98.2	98.2	98.2	98.2	1.8
Wyoming	2.1	4.8	15.3	42.1	61.0	80.0	87.4	91.5	94.1	96.8	98.1	99.2	100.0	100.0	-
Utah	-	1.3	11.6	25.4	30.5	45.5	55.8	61.4	70.3	75.5	76.6	80.6	83.1	84.6	15.4
Idaho	-	4.1	7.4	21.7	32.5	47.1	50.0	61.4	77.9	85.8	87.6	91.8	93.5	93.5	6.5
Montana	-	2.7	17.4	45.9	67.5	80.6	93.1	94.4	97.2	97.5	97.9	97.9	98.2	98.2	1.8
California	3.9	12.9	26.8	29.5	37.3	44.8	57.2	67.8	80.0	92.4	94.1	94.9	96.3	98.4	1.6
Total	2.4	9.1	26.7	41.8	55.2	65.2	74.9	82.0	88.3	94.1	95.1	95.9	96.9	97.8	2.2
Non-irrigated -															
Michigan	0.7	3.5	9.4	37.5	61.4	73.0	93.1	94.6	95.4	95.5	98.3	98.5	99.5	100.0	-
Minnesota	2.6	5.4	14.8	35.8	64.5	78.7	90.0	93.2	93.8	97.2	97.2	100.0	100.0	100.0	-
Total	1.8	4.6	12.6	36.5	63.1	76.4	91.3	93.8	94.5	96.5	97.6	99.4	99.8	100.0	-
All States	2.4	8.8	25.6	41.4	55.8	66.1	76.2	82.9	88.8	94.2	95.3	96.2	97.1	98.0	2.0

Table 5. - Sugar beets: Percentag

States	$3.50	$4.00	$4.50
Irrigated -			
Colorado	0.5	7.2	28.2
Nebraska	2.4	6.3	25.4
Kansas	9.1	27.3	36.4
South Dakota	-	-	8.3
Wyoming	-	9.1	18.2
Utah	0.8	3.1	11.7
Idaho	-	-	16.0
Montana	-	5.6	22.2
California	-	5.8	13.5
Total	0.9	6.2	21.2
Non-irrigated -			
Michigan	-	-	-
Minnesota	-	-	6.2
Total	-	-	2.1
All States	0.8	5.2	18.2
Irrigated -			
Colorado	1.0	7.2	20.1
Nebraska	3.9	13.4	43.3
Kansas	-	4.0	12.0
South Dakota	-	-	-
Wyoming	2.6	5.2	13.0
Utah	-	.8	7.0
Idaho	-	4.2	8.3
Montana	-	2.7	13.3
California	4.6	12.3	23.1
Total	1.5	6.4	19.0
Non-irrigated -			
Michigan	1.0	5.0	12.1
Minnesota	2.0	4.1	14.3
Total	1.4	4.7	12.8
All States	1.5	6.1	18.0

Table 5. - Sugar beets: Percentage of number of farms which produced sugar beets at a cost below specified limits by States

States	Cost per ton less than - $3.50	$4.00	$4.50	$5.00	$5.50	$6.00	$6.50	$7.00	$7.50	$8.00	$8.50	$9.00	$9.50	$10.00	$10.00 or more
							1930								
Irrigated -															
Colorado	0.5	7.2	28.2	44.5	65.1	77.5	86.1	90.0	91.9	93.8	93.8	94.7	96.2	96.6	3.4
Nebraska	2.4	6.3	25.4	54.0	71.4	88.1	93.7	96.8	96.8	97.6	98.4	98.4	99.2	99.2	.8
Kansas	9.1	27.3	36.4	54.5	72.7	86.4	86.4	90.9	90.9	95.8	100.0	100.0	100.0	100.0	-
South Dakota	-	-	8.3	33.3	50.0	62.5	79.2	83.3	87.5	87.5	95.8	95.8	95.8	100.0	-
Wyoming	-	9.1	18.2	41.6	63.6	83.1	90.9	94.8	96.1	98.7	98.7	98.7	98.7	98.7	1.3
Utah	0.8	3.1	11.7	31.2	43.0	53.9	66.4	74.2	78.9	82.8	84.4	88.3	90.6	92.2	7.8
Idaho	-	-	16.0	24.0	34.0	36.0	46.0	62.0	68.0	80.0	82.0	86.0	86.0	86.0	14.0
Montana	-	5.6	22.2	36.1	55.6	83.3	88.9	94.4	95.8	97.2	97.2	97.2	97.2	97.2	2.8
California	-	5.8	13.5	23.1	36.5	48.1	61.5	71.2	76.9	80.8	84.6	86.5	86.5	86.5	13.5
Total	0.9	6.2	21.2	39.9	57.1	71.4	80.3	86.1	88.6	91.4	92.6	93.9	94.9	95.4	4.6
Non-irrigated -															
Michigan	-	-	-	2.1	3.2	8.4	16.8	32.6	48.4	57.9	70.5	78.9	85.3	89.5	10.5
Minnesota	-	-	6.2	14.6	27.1	37.5	58.3	81.2	85.4	87.5	89.5	91.7	93.8	93.8	6.2
Total	-	-	2.1	6.3	11.2	18.2	30.8	49.0	60.8	67.8	76.9	83.2	88.1	90.9	9.1
All States	0.8	5.2	18.2	34.6	49.8	63.0	72.4	80.2	84.2	87.7	90.1	92.2	93.8	94.7	5.3
							1931								
Irrigated -															
Colorado	1.0	7.2	20.1	32.3	55.5	64.5	76.1	86.7	88.6	90.4	92.5	93.8	96.2	96.7	3.3
Nebraska	3.9	13.4	43.3	63.0	77.2	85.8	89.0	92.9	96.1	96.1	96.1	96.1	97.6	98.4	1.6
Kansas	-	4.0	12.0	24.0	52.0	64.0	68.0	84.0	84.0	88.0	88.0	88.0	88.0	88.0	12.0
South Dakota	-	-	-	12.5	16.7	37.5	66.7	83.3	87.5	91.6	91.6	91.6	90.6	91.6	8.4
Wyoming	2.6	5.2	13.0	33.8	49.4	70.1	80.5	85.7	90.9	93.5	96.1	98.7	100.0	100.0	-
Utah	-	.8	7.0	16.3	20.9	29.5	38.0	43.4	49.6	55.8	58.1	61.2	63.6	65.9	34.1
Idaho	-	4.2	8.3	16.7	27.1	41.7	45.8	58.3	62.5	68.8	72.9	77.1	81.2	81.2	18.8
Montana	-	2.7	13.3	34.7	57.3	72.0	86.7	89.3	93.3	94.7	96.0	96.0	97.3	97.3	2.7
California	4.6	12.3	23.1	26.2	33.8	38.5	49.2	63.1	75.4	78.5	84.6	86.2	89.2	92.3	7.7
Total	1.5	6.4	19.0	34.3	48.0	59.1	68.7	76.3	80.6	84.0	86.0	87.5	89.6	90.5	9.5
Non-irrigated -															
Michigan	1.0	5.0	12.1	34.3	57.6	72.7	87.9	90.9	91.9	92.9	97.0	98.0	99.0	100.0	-
Minnesota	2.0	4.1	14.3	34.7	53.1	71.4	85.7	91.8	93.9	98.0	98.0	100.0	100.0	100.0	-
Total	1.4	4.7	12.8	34.5	56.1	72.3	87.2	91.2	92.6	94.6	97.3	98.6	99.3	100.0	-
All States	1.5	6.1	18.0	34.3	49.3	61.2	71.6	78.6	82.5	85.7	87.8	89.3	91.2	92.0	8.0

Table 6. - Sugar cane - Louisiana: Number of farms, acreage and production covered by the cost inquiry (independent farms only)

Area	Number of farms	Acreage				Production (tons)	
		Plant	First stubble	Second and third stubble	Total	Total	Per acre
				1930			
Baton Rouge	23	837.0	1,063.0	-	1,900.0	34,147	17.01
Lafayette	20	728.5	727.8	20.0	1,476.3	16,874	11.19
St. Martinsville	25	492.2	504.5	30.0	1,026.7	14,032	14.70
New Iberia	37	1,303.0	1,158.7	-	2,461.7	32,680	13.53
Franklin	31	773.2	994.4	-	1,767.6	22,267	12.63
Donaldsonville	22	2,535.4	2,228.9	419.9	5,184.2	97,605	19.31
Houma-Thibodaux	29	1,172.0	1,198.5	376.2	2,746.7	52,961	19.18
Total	187	7,841.3	7,875.8	846.1	16,563.2	270,566	
				1931			
Baton Rouge	24	969.5	876.0	232.0	2,077.5	34,484	16.03
Lafayette	20	784.4	621.6	86.0	1,492.0	15,494	10.55
St. Martinsville	26	621.4	449.6	72.0	1,143.0	14,614	13.06
New Iberia	37	1,391.8	1,130.0	14.0	2,535.8	33,515	12.85
Franklin	31	1,013.6	766.3	32.0	1,811.9	23,273	12.46
Donaldsonville	19	1,957.4	1,913.9	742.9	4,614.2	71,203	16.16
Houma-Thibodaux	29	1,093.6	1,144.7	619.5	2,857.8	48,728	16.94
Total	186	7,831.7	6,902.1	1,798.4	16,532.2	241,311	

Table 7. - Sugar cane--Louisiana: Cost of production on independent farms, by items, by areas, 1930

Cost item	Baton Rouge	Lafayette	St. Martinsville	New Iberia	Franklin	Donaldsonville	Houma-Thibodaux
Cost per acre							
Labor	$48.95	$27.29	$30.83	$32.78	$36.41	$45.82	$42.86
Repairs and depreciation -							
Machinery	4.68	2.35	2.45	2.61	2.28	3.80	2.87
Buildings, fences, and drains	2.73	2.85	2.88	3.13	3.51	3.14	4.72
Taxes	2.31	2.80	3.54	3.56	3.20	3.40	2.87
Miscellaneous	6.94	4.70	2.00	4.44	4.23	9.60	7.61
Total	65.61	39.99	41.70	46.52	49.63	65.76	60.93
Credits and adjustments							
Adjustments for inventory	1.48	2.41	1.34	1.86	1.48	1.05	3.09
Miscellaneous credits	-3.37	-3.54	-2.68	-3.49	-6.52	-1.16	-4.69
Net cost without interest	63.72	38.86	40.36	44.89	44.59	65.65	59.33
Imputed interest on investment at 6 percent	12.80	13.52	13.45	11.57	11.89	12.27	14.34
Total cost per acre including interest	76.52	52.38	53.81	56.46	56.48	77.92	73.67
Yield per acre of cane - tons	17.01	11.19	14.70	13.53	12.63	19.31	19.18
Total cost per ton including interest	$4.50	$4.68	$3.66	$4.17	$4.47	$4.04	$3.84
Imputed interest	.75	1.21	.91	.86	.94	.64	.74
Total cost per ton excluding interest	3.75	3.47	2.75	3.31	3.53	3.40	3.10

Note: Baton Rouge includes West Baton Rouge, Iberville, and Pointe Coupee Parishes; Lafayette includes Lafayette Parish; St. Martinsville includes St. Martin Parish; New Iberia includes Vermilion and Iberia Parishes; Franklin includes St. Mary's Parish; Donaldsonville includes Assumption, Ascension, and St. James Parishes; Houma-Thibodaux includes Lafourche and Terrebonne Parishes.

Table 8. - Sugar cane - Louisiana: Cost of production on independent farms, by items, by areas, 1931

Cost item	Baton Rouge	Lafayette	St. Martinsville	New Iberia	Franklin	Donaldsonville	Houma-Thibodaux
Cost per acre							
Labor	$41.85	$24.23	$25.24	$29.30	$32.17	$37.54	$37.90
Repairs and depreciation							
Machinery	3.94	2.34	2.05	2.34	2.19	3.31	2.51
Buildings, fences, and drains	3.32	2.82	2.53	3.10	3.43	2.86	4.37
Taxes	2.37	2.85	2.81	3.44	3.06	3.02	2.51
Miscellaneous	7.18	3.94	1.88	4.65	4.68	7.46	7.79
Total	58.66	36.18	34.51	42.83	45.53	54.19	55.08
Credits and adjustments							
Adjustments for inventory	1.10	2.10	.43	.12	1.05	.92	2.09
Miscellaneous credits	-3.40	-2.29	-2.20	-2.27	-2.94	-1.68	-4.44
Net cost without interest	56.36	35.99	32.74	40.68	43.64	53.43	52.73
Imputed interest on investment at 6 percent	12.99	13.24	11.58	11.15	11.37	11.33	13.19
Total cost per acre including interest	69.35	49.23	44.32	51.83	55.01	64.76	65.92
Yield per acre of cane - tons	16.03	10.55	13.06	12.85	12.46	16.16	16.94
Total cost per ton, including interest	$4.33	$4.67	$3.39	$4.03	$4.41	$4.01	$3.89
Imputed interest	.81	1.26	.89	.87	.91	.70	.77
Total cost per ton excluding interest	3.52	3.41	2.50	3.16	3.50	3.31	3.12

Note: Baton Rouge includes West Baton Rouge, Iberville, and Pointe Coupee Parishes; Lafayette includes Lafayette Parish; St. Martinsville includes St. Martins Parish; New Iberia includes Vermilion and Iberia Parishes; Franklin includes St. Mary's Parish; Donaldsonville includes Assumption, Ascension, and St. James Parishes; Houma-Thibodaux includes Lafourche and Terrebonne Parishes.

Tab

Areas
Baton Rouge
Lafayette
St. Martinsville
New Iberia
Franklin
Donaldsonville
Thibodaux-Houma
Louisiana
Baton Rouge
Lafayette
St. Martinsville
New Iberia
Franklin
Donaldsonville
Thibodaux-Houma
Louisiana

Table 9.- Sugar cane.-Louisiana: Percentage of output which was produced at a cost below specified limits by areas
(independent farms only)

Areas	Cost per ton less than												
	$3.00	$3.25	$3.50	$3.75	$4.00	$4.25	$4.50	$4.75	$5.00	$5.25	$5.50	$5.75	$6.00	$6.00 or more
							1930							
Baton Rouge	6.3	6.3	12.5	21.1	27.4	34.5	35.8	55.2	55.2	86.7	86.7	86.7	86.7	13.3
Lafayette	-	16.8	16.8	25.6	40.9	51.5	76.0	77.0	79.1	88.8	95.0	95.0	95.0	5.0
St. Martinsville	39.7	58.8	58.8	61.9	73.1	77.4	79.4	82.9	82.9	82.9	95.3	100.0	100.0	-
New Iberia	5.8	28.4	29.5	42.6	44.5	59.4	70.9	73.6	77.1	78.4	87.9	87.9	92.2	7.8
Franklin	5.1	6.6	8.5	14.2	22.8	52.2	58.9	78.1	84.4	87.5	97.5	97.5	97.5	2.5
Donaldsonville	2.2	4.3	33.2	53.7	71.0	76.1	76.1	87.7	93.8	93.8	93.8	98.9	100.0	-
Thibodaux-Houma	25.1	29.0	32.3	57.7	61.1	82.6	95.9	95.9	97.1	97.5	97.5	97.5	97.5	2.5
Louisiana	9.7	16.1	28.2	44.5	54.6	64.8	73.0	81.8	85.3	90.4	93.4	95.4	96.4	3.6
							1931							
Baton Rouge	-	5.7	14.8	14.8	26.1	31.2	41.0	79.4	80.6	80.6	91.2	91.6	93.4	6.6
Lafayette	-	15.5	17.2	22.3	50.5	52.9	58.7	72.1	82.6	82.6	83.5	88.3	88.3	11.7
St. Martinsville	38.7	45.7	57.1	62.4	75.8	84.2	91.2	91.2	100.0	100.0	100.0	100.0	100.0	-
New Iberia	6.3	23.8	42.5	46.7	60.3	73.4	77.0	80.6	85.6	90.2	92.1	92.1	97.4	2.6
Franklin	1.5	1.5	10.6	29.8	35.0	71.0	74.1	83.2	83.2	85.4	89.1	90.6	95.0	5.0
Donaldsonville	5.9	14.0	15.4	25.9	35.7	66.6	76.0	89.3	89.3	97.7	88.6	98.6	98.6	1.4
Thibodaux-Houma	11.2	26.6	31.4	55.6	61.6	88.7	92.9	97.6	97.6	97.6	98.2	98.6	98.6	1.4
Louisiana	7.4	17.5	24.5	35.6	46.3	67.6	74.2	86.8	88.9	92.2	94.7	95.3	96.8	3.2

T

Areas	
Baton Rouge	
Lafayette	
St. Martinsville	
New Iberia	
Franklin	
Donaldsonville	
Thibodaux-Houma	
Louisiana	
Baton Rouge	
Lafayette	
St. Martinsville	
New Iberia	
Franklin	
Donaldsonville	
Thibodaux-Houma	
Louisiana	

Table 9.- Sugar cane.-Louisiana: Percentage of output which was produced at a cost below specified limits by areas
(independent farms only)

Areas	Cost per ton less than													$6.00 or more
	$3.00	$3.25	$3.50	$3.75	$4.00	$4.25	$4.50	$4.75	$5.00	$5.25	$5.50	$5.75	$6.00	
							1930							
Baton Rouge	6.3	6.3	12.5	21.1	27.4	34.5	35.8	55.2	55.2	86.7	86.7	86.7	86.7	13.3
Lafayette	-	16.8	16.8	25.6	40.9	51.5	76.0	77.0	79.1	88.8	95.0	95.0	95.0	5.0
St. Martinsville	39.7	58.8	58.8	61.9	73.1	77.4	79.4	82.9	82.9	82.9	95.3	100.0	100.0	-
New Iberia	5.8	28.4	29.5	42.6	44.5	59.4	70.9	73.6	77.1	78.4	87.9	87.9	92.2	7.8
Franklin	5.1	6.6	8.5	14.2	22.8	52.2	58.9	78.1	84.4	87.5	97.5	97.5	97.5	2.5
Donaldsonville	2.2	4.3	33.2	53.7	71.0	76.1	76.1	87.7	93.8	93.8	93.8	98.9	100.0	-
Thibodaux-Houma	25.1	29.0	32.3	57.7	61.1	82.6	95.9	95.9	97.1	97.5	97.5	97.5	97.5	2.5
Louisiana	9.7	16.1	28.2	44.5	54.6	64.8	73.0	81.8	85.3	90.4	93.4	95.4	96.4	3.6
							1931							
Baton Rouge	-	5.7	14.8	14.8	26.1	31.2	41.0	79.4	80.6	80.6	91.2	91.6	93.4	6.6
Lafayette	-	15.5	17.2	22.3	50.5	52.9	58.7	72.1	82.6	82.6	83.5	88.3	88.3	11.7
St. Martinsville	38.7	45.7	57.1	62.4	75.8	84.2	91.2	91.2	100.0	100.0	100.0	100.0	100.0	-
New Iberia	6.3	23.8	42.5	46.7	60.3	73.4	77.0	80.6	85.6	90.2	92.1	92.1	97.4	2.6
Franklin	1.5	1.5	10.6	29.8	35.0	71.0	74.1	83.2	83.2	85.4	89.1	90.6	95.0	5.0
Donaldsonville	5.9	14.0	15.4	25.9	35.7	66.6	76.0	89.3	89.3	97.7	88.6	98.6	98.6	1.4
Thibodaux-Houma	11.2	26.6	31.4	55.6	61.6	88.7	92.9	97.6	97.6	97.6	98.2	98.6	98.6	1.4
Louisiana	7.4	17.5	24.5	35.6	46.3	67.6	74.2	86.8	88.9	92.2	94.7	95.3	96.8	3.2

Areas
Baton Rouge
Lafayette
St. Martinsville
New Iberia
Franklin
Donaldsonville
Thibodaux-Houma
Louisiana
Baton Rouge
Lafayette
St. Martinsville
New Iberia
Franklin
Donaldsonville
Thibodaux-Houma
Louisiana

Table 10.- Sugar cane - Louisiana: Percentage of number of farms which produced sugar cane at a cost below specified limits by areas
(independent farms only)

Areas	Cost per ton less than												$6.00 or more
	$3.00	$3.25	$3.50	$3.75	$4.00	$4.25	$4.50	$4.75	$5.00	$5.25	$5.50	$5.75	$6.00	
							1930							
Baton Rouge	8.7	8.7	21.7	34.8	47.8	56.5	60.9	73.9	73.9	82.6	82.6	82.6	82.6	17.4
Lafayette	-	10.0	10.0	25.0	35.0	45.0	60.0	65.0	70.0	80.0	85.0	85.0	85.0	15.0
St. Martinsville	32.0	48.0	48.0	52.0	60.0	64.0	68.0	72.0	72.0	72.0	88.0	100.0	100.0	-
New Iberia	8.1	18.9	21.6	35.1	37.8	48.6	64.9	70.3	75.7	81.1	86.5	86.5	89.2	10.8
Franklin	6.5	9.7	12.9	19.4	29.0	41.9	48.4	67.7	74.2	80.6	93.5	93.5	93.5	6.5
Donaldsonville	4.5	9.1	31.8	45.5	63.6	63.6	68.2	77.3	86.4	86.4	86.4	95.5	100.0	-
Thibodaux-Houma	24.1	34.5	41.4	48.3	55.2	69.0	82.8	82.8	86.2	89.7	89.7	89.7	89.7	10.3
Louisiana	12.3	20.3	26.7	36.9	46.0	55.1	64.7	72.7	77.0	81.8	87.7	90.4	91.4	8.6
							1931							
Baton Rouge	-	12.5	29.2	29.2	45.8	54.2	62.5	75.0	79.2	79.2	83.3	87.5	91.7	8.3
Lafayette	-	10.0	10.0	15.0	30.0	35.0	45.0	55.0	65.0	65.0	70.0	80.0	80.0	20.0
St. Martinsville	30.8	38.5	46.2	53.8	73.1	80.8	88.5	88.5	100.0	100.0	100.0	100.0	100.0	-
New Iberia	10.8	18.9	32.4	37.8	48.6	62.2	67.6	73.0	78.4	86.5	89.2	89.2	94.6	5.4
Franklin	3.2	3.2	9.7	32.3	35.5	54.8	61.3	71.0	71.0	77.4	80.6	83.9	90.3	9.7
Donaldsonville	10.5	21.1	26.3	31.6	47.4	63.2	73.7	84.2	84.2	89.5	94.7	94.7	94.7	5.3
Thibodaux-Houma	17.2	24.1	37.9	48.3	58.6	69.0	79.3	86.2	86.2	86.2	89.7	93.1	93.1	6.9
Louisiana	10.8	17.7	28.0	36.6	48.9	60.8	68.8	76.3	80.6	83.9	87.1	89.8	92.5	7.5

Table 11. - Sugar cane - Louisian

Number of farms	
Number of workstock per farm	
Land utilization, acres in -	
Cane	
Corn 1/	
Other	
Total crop acres	
Other land	
Total farm area	
Percent of crop acres in -	
Cane	

Table 11. - Sugar cane - Louisiana: Summary of operations of independent cane farms covered by the cost inquiry, by areas

1930

Averages per farm

	Baton Rouge	Lafayette	St.Martinsville	New Iberia	Franklin	Donaldsonville	Houma-Thibodaux	Average, all farms
Number of farms	23	20	25	37	31	22	29	187
Number of workstock per farm	9.8	10.0	5.6	8.5	8.0	24.7	12.0	10.8
Land utilization, acres in -								
Cane	82.6	73.8	41.1	66.5	57.0	235.6	94.7	88.6
Corn 1/	67.3	66.9	48.4	70.8	66.2	159.4	64.9	75.7
Other	.9	11.7	5.6	8.8	13.6	4.1	2.2	6.9
Total crop acres	150.8	152.4	95.1	146.1	136.8	399.1	161.8	171.2
Other land	87.0	40.4	33.2	48.1	44.2	272.1	148.6	91.4
Total farm area	237.8	192.8	128.3	194.2	181.0	671.2	310.4	262.6
Percent of crop acres in -								
Cane	55	48	43	46	42	59	59	52
Corn	44	44	51	48	48	40	40	44
Other crops	1	8	6	6	10	1	1	4
Capital -								
Real estate -								
Land	$10,113	$8,593	$5,036	$5,843	$4,765	25,543	$9,974	$9,334
Buildings	4,645	3,219	1,359	3,047	2,776	7,252	5,500	3,866
Total real estate	14,758	11,812	6,395	8,890	7,541	32,795	15,472	13,200
Workstock	1,321	1,182	961	1,068	938	3,077	1,639	1,331
Other stock	210	210	269	265	237	356	248	278
Machinery	1,220	661	227	671	488	2,389	1,195	931
Cane plantings 2/	879	896	450	705	547	2,894	838	903
Feed and supplies	854	445	325	559	584	1,402	472	643
Total	19,242	15,406	8,827	12,158	10,335	42,913	19,764	17,346
Receipts -								
Cane	4,575	2,475	$1,694	$2,622	$2,219	$13,968	$5,951	$4,507
Other crops	453	115	37	210	228	86	105	178
Livestock	25	47	58	38	34	125	47	48
Livestock products	25	70	22	16	30	20	19	27
Net inventory increase	-	-	-	-	-	-	-	-
Total	5,078	2,707	1,787	2,886	2,511	14,199	6,122	4,760
Expenses -								
Hired labor	$3,744	$1,454	$663	$1,690	$1,461	$9,285	$3,501	$2,888
Unpaid family labor	140	12	139	79	73	241	92	104
Repairs and depreciation -								
Machinery	554	143	89	157	129	844	414	311
Bldgs., fences & drains	250	175	105	191	171	654	344	260
Fertilizer	258	67	19	133	111	623	265	201
Taxes	202	191	134	236	170	713	280	265
Net inventory decrease	149	197	64	122	82	353	279	174
Miscellaneous	537	296	58	230	135	1,565	455	429
Total	5,834	2,535	1,271	2,858	2,332	14,278	5,630	4,632
Farm income 3/	-$756	+$172	+$516	+$28	+$179	-$79	+$482	+$128
Imputed interest on capital at 6%	$1,155	924	$494	$729	$620	$2,575	$1,186	$1,041
Labor income 4/	-$1,911	-$752	+$22	-$701	-$441	-$2,654	-$704	-$913
Operator's labor and management 5/	$444	$398	$340	$292	$468	$805	$466	$450
Return to capital 6/	-$1,200	-$226	+$176	-$364	-$289	-$881	+$16	-$322
Percent return to capital	-6.2	-1.5	2.1	-3.0	-2.8	-2.1	.1	-1.9
Family living 7/	$287	$301	$338	$340	$392	$526	$409	$381

1/ Usually soy beans or cowpeas are planted with the corn.
2/ Includes stubble, fall plantings, and windrowed seed for spring planting.
3/ Farm income is the difference between receipts and expenses, exclusive of interest on capital and operator's wages and management.
4/ Labor income is the farm income less 6 percent interest on capital. It represents what the business has earned for the labor and management of the farmer in addition to the family living.
5/ Operator's labor and management is a charge based on the going cash wage for that kind of work in the community exclusive of the value of the usual perquisities (family living).
6/ Return to capital represents what the capital earned after the operator's wages and management has been deducted from the farm income.
7/ Family living represents the value of food products and fuel produced on the farm used by the operator and his family. It also includes interest, repairs, and depreciation on the farm dwelling.

Table 12. - Sugar cane - Louisiana

Number of farms	
Number of work stock per farm	

Table IX. - Sugar cane - Louisiana. Number of [illegible] farms covered by the 1931 survey, by areas

1931

Averages per farm

	Baton Rouge	Lafayette	St. Martinsville	New Iberia	Franklin	Donaldsonville	Houma-Thibodaux	Average all farms
Number of farms	24	20	26	37	31	19	29	186
Number of work stock per farm	10.5	9.8	5.5	8.8	8.0	23.4	12.0	10.5
Land utilization, acres in -								
Cane	86.5	74.6	44.0	68.5	58.5	242.9	98.6	88.9
Corn 1/	68.2	66.5	47.9	71.0	67.9	175.6	60.6	75.5
Other crops	8.0	14.2	3.2	10.1	11.0	7.2	[illegible]	8.4
Total crop acres	162.7	155.3	95.1	149.6	137.4	425.7	164.7	172.8
Other land	121.1	40.3	34.3	47.2	28.1	240.3	151.0	90.4
Total farm area	283.8	195.6	129.4	196.8	165.5	666.0	316.7	263.2
Percent of crop acres in -								
Cane	53	48	46	46	43	57	60	51
Corn	42	43	50	47	49	41	37	44
Other crops	5	9	4	7	8	2	3	5
Capital -								
Real estate -								
Land	$11,082	$8,756	$5,249	$5,934	$4,831	$24,722	$10,062	$9,185
Buildings	5,118	3,219	1,335	3,082	2,885	7,431	5,500	3,904
Total real estate	16,200	11,975	6,584	9,016	7,716	32,153	15,562	13,089
Work stock	1,395	1,054	522	1,008	849	2,828	1,521	1,235
Other stock	236	385	231	262	223	327	241	264
Machinery	1,210	661	226	671	480	2,338	1,195	897
Cane plantings 2/	834	840	451	714	599	2,717	779	902
Feed and supplies	628	360	259	396	426	1,200	364	485
Total	20,503	15,275	8,273	12,067	10,293	41,563	19,662	16,872
Receipts -								
Cane	$4,092	$1,896	$1,539	$2,327	$1,989	$11,455	$5,167	$3,717
Other crops	399	65	31	66	89	241	263	157
Livestock	41	40	38	36	25	98	33	42
Livestock products	30	75	19	13	21	17	18	25
Net inventory increase	-	-	-	26	-	-	-	-
Total	4,562	2,076	1,627	2,468	2,124	11,811	5,481	3,941
Expenses -								
Hired labor	$3,511	$1,104	$681	$1,582	$1,375	$7,798	$2,911	$2,472
Unpaid family labor	137	175	172	77	49	167	88	98
Repairs and depreciation -								
Machinery	311	145	89	153	130	892	358	267
Buildings, fences, and drains	322	175	107	192	177	607	356	261
Fertilizer	203	54	19	138	127	602	269	187
Taxes	227	195	127	234	169	701	275	257
Net inventory decrease	13	133	22	-	90	333	147	86
Miscellaneous	619	242	66	272	164	1,250	589	416
Total	5,343	2,223	1,183	2,643	2,281	12,350	4,923	4,044
Farm income 3/	-$781	-$147	+$444	-$180	-$157	-$539	+$488	-$103
Imputed interest on capital at 6%	$1,230	$916	$496	$724	$618	$2,494	$1,180	$1,012
Labor income 4/	-$2,011	-$1,063	-$52	-$904	-$775	-$3,033	-$692	-$1,115
Operator's labor and management 5/	$445	$400	$301	$401	$465	$825	$454	$447
Return to capital 6/	-$1,226	-$547	+$143	-$581	-$622	-$1,364	+$34	-$550
Percent return to capital	-6.0	-3.6	+1.7	-2.8	-6.0	-3.3	+.2	-3.3
Family living 7/	$318	$377	$290	$318	$350	$479	$389	$353

1/ Usually soy beans or cowpeas are planted with the corn.

2/ Includes stubble, fall plantings, and windrowed seed for spring planting.

3/ Farm income is the difference between receipts and expenses, exclusive of interest on capital and operator's wages and management.

4/ Labor income is the farm income less 6 percent interest on capital. It represents what the business has earned for the labor and management of the farmer in addition to the family living.

5/ Operator's labor and management is a charge based on the going cash wage for that kind of work in the community exclusive of the value of the usual perquisites (family living).

6/ Return to capital represents what the capital earned after the operator's wages and management has been deducted from the farm income.

7/ Family living represents the value of food products and fuel produced on the farm used by the operator and his family. It also includes interest, repairs, and depreciation on the farm dwelling.

Table 13. - Sugar Cane - Louisiana: Tenure of cane farms 1/ of different sized plantings in principal cane-producing parishes

1929

Size of planting of sugar cane	Number of farms				Percent of total number of farms	Percent of total acreage in sugar cane represented by specified group
	Owned	Rented		Total		
		Cash	Other			
Less than 20 acres	1,641	335	2,278	4,254	69.8	17.0
20 to 39 acres	411	38	550	999	16.4	13.4
40 to 59 acres	140	8	188	336	5.5	7.3
60 to 79 acres	62	9	64	135	2.2	4.1
80 to 99 acres	39	5	24	68	1.1	2.6
100 to 499 acres	250	14	39	248	4.0	31.8
500 to 999 acres				44	.8	14.4
1,000 and over acres				11	.2	9.4
Total, all plantings	2,543	409	3,143	6,095	100.0	100.0

Source: Bureau of the Census.

1/ Includes Ascension, Assumption, Iberia, Iberville, Lafayette, Lafourche, Pointe Coupee, St. James, St. John, St. Martin, St. Mary, Terrebonne, Vermilion, and West Baton Rouge Parishes.

Table 14. - Sugar cane-Louisiana: Classification of farms according to acreage planted in sugar cane

Parishes	Acres in sugar cane in 1929								
	Less than 20	20 to 39	40 to 59	60 to 79	80 to 99	100 to 499	500 to 999	1000 and over	Total
	Number of farms								
West Baton Rouge	100	16	7	1	-	9	5	2	140
Iberville	110	43	53	19	8	22	6	3	264
Pointee Coupee	467	36	10	4	-	11	-	1	529
Lafayette	636	149	32	13	3	7	-	-	840
St. Martin	871	108	29	14	2	5	2	-	1,031
Iberia	655	266	73	29	15	23	1	-	1,062
Vermilion	629	143	21	2	2	4	-	-	801
St. Mary	139	57	26	7	7	31	10	2	279
Ascension	186	12	3	1	1	13	-	-	216
Assumption	80	56	35	22	8	47	3	-	251
St. James	40	15	9	4	3	22	2	-	95
St. John	38	8	4	3	4	14	5	-	76
Lafourche	189	53	16	8	7	21	5	1	300
Terrebonne	114	37	18	8	8	19	5	2	211
Total	4,254	999	336	135	68	248	44	11	6,095
Total, percent	69.8	16.4	5.5	2.2	1.1	4.0	0.8	0.2	100.0
	Percent of total acreage in sugar cane represented by specified group								Acreage
West Baton Rouge	7	4	3	1	-	25	32	28	10,805
Iberville	4	7	13	7	4	20	19	26	17,990
Pointe Coupee	31	13	6	4	-	31	-	15	7,573
Lafayette	34	34	12	7	2	11	-	-	12,041
St. Martin	42	21	10	7	1	9	10	-	12,743
Iberia	24	28	14	7	5	20	2	-	24,727
Vermilion	50	34	9	1	2	4	-	-	10,622
St. Mary	5	8	5	2	3	29	31	17	20,634
Ascension	16	8	4	2	2	68	-	-	3,983
Assumption	4	8	9	8	3	60	8	-	19,567
St. James	4	4	5	3	3	66	15	-	8,613
St. John	4	2	2	2	4	43	43	-	7,898
Lafourche	8	9	5	4	4	37	20	13	15,297
Terrebonne	4	7	5	3	4	23	21	33	16,764
Average	17.0	13.4	7.3	4.1	2.6	31.8	14.4	9.4	189,257

Source: Bureau of the Census.

Table 15.- Sugar cane - Puerto Rico: Number of farms, acreage and production, covered by the cost inquiry (independent farms only)

Area	Number of farms	Acres			Production (tons)	
		Plant	Stubble	Total	Total	Per acre 1/
			1930-31			
Fijardo	17	520	1,286	1,806	51,497	26.78
Caguas	19	683	2,458	3,141	70,369	23.62
Coloso	18	1,226	1,948	3,174	78,190	23.58
Cambalache-Constancia	18	586	1,618	2,204	50,763	19.95
Guanica	22	1,214	3,012	4,226	84,541	18.94
Mercedita-Rufina	17	1,157	1,530	2,687	77,558	25.09
Aguirre	14	1,594	1,568	3,162	112,725	37.87
Total	125	6,980	13,420	20,400	525,643	
			1931-32			
Fijardo	18	372	1,709	2,081	59,436	25.90
Caguas	19	869	2,336	3,205	96,584	29.83
Coloso	18	1,104	2,161	3,265	81,039	23.88
Cambalache-Constancia	18	805	1,492	2,297	65,861	26.02
Guanica	22	1,325	2,966	4,291	83,205	18.60
Mercedita-Rufina	17	1,183	1,523	2,706	92,512	30.21
Aguirre	15	1,453	1,716	3,169	132,215	42.93
Total	127	7,111	13,903	21,014	610,852	

1/ Simple average of the individual farm yields.

Table 16. - Sugar cane-Puerto Rico: Cost of production by independent producers, by items, for each area covered by the Commission's inquiry

1930-31

Item	Fijardo	Caguas	Coloso	Constancia Cambalache	Guanica	Mercedita-- Rufina	Aguirre
Cost per acre-							
Cultivation	$29.93	$27.95	$25.37	$18.05	$13.81	$16.39	$22.11
Irrigation -							
Labor	-	-	1.08	-	.44	6.44	23.50
Water and other	-	-	1.32	-	1.11	8.93	22.80
Total irrigation	-	-	2.40	-	1.55	15.37	46.30
Harvesting	44.24	25.51	23.91	19.83	23.83	25.13	31.23
Supervision	9.02	11.69	7.32	8.20	4.54	8.66	3.42
Taxes	2.01	2.48	2.59	2.12	2.66	2.85	6.68
Fertilizer	18.45	22.20	16.12	14.70	12.07	10.82	14.99
Other	5.75	7.68	3.70	5.74	3.94	7.68	3.55
Development	14.82	15.41	22.19	14.14	10.14	15.45	16.47
Total, without land charge	124.22	112.92	103.60	82.78	72.54	102.35	144.75
Land charge-							
Imputed interest at 6 percent	5.47	8.30	8.78	12.50	11.21	13.98	24.30
Total with land charge	129.69	121.22	112.38	95.28	83.75	116.33	169.05
Yield per acre(short tons)	26.78	23.62	23.58	19.95	18.94	25.09	37.87
Cost per short ton -							
Total, without land charge	$4.64	$4.78	$4.40	$4.15	$3.83	$4.08	$3.82
Land charge	.20	.35	.37	.63	.59	.56	.64
Total with land charge	4.84	5.13	4.77	4.78	4.42	4.64	4.46

Table 17. - Sugar cane - Puerto Rico: Cost of production by independent producers, by items, for each area covered by the Commission's inquiry

1931-32

Item	Fijardo	Caguas	Coloso	Constancia-Cambalache	Guanica	Mercedita-Rufina	Aguirre
Cost per acre:							
Cultivation	$30.60	$27.61	$25.12	$17.24	$12.76	$14.88	$19.22
Irrigation -							
Labor	-	-	1.03	-	.20	7.33	21.49
Water and other	-	-	1.36	-	.80	7.52	18.71
Total irrigation	-	-	2.39	-	1.00	14.85	40.20
Harvesting	42.12	26.52	23.93	26.21	22.29	28.02	34.71
Supervision	7.54	12.47	7.01	7.80	4.26	7.27	2.66
Taxes	1.99	2.49	2.59	2.12	2.66	2.85	6.68
Fertilizer	14.72	22.78	14.00	13.19	9.84	10.81	12.68
Other	5.43	5.41	3.39	6.02	3.31	6.74	3.49
Development	14.82	15.41	22.19	14.14	10.14	15.45	16.47
Total, without land charge	117.22	112.69	100.62	86.72	66.26	100.87	136.11
Land charge -							
Imputed interest at 6 percent	5.34	8.30	8.78	12.50	11.21	13.98	24.75
Total with land charge	122.56	120.99	109.40	99.22	77.47	114.85	160.86
Yield per acre (short tons)	25.90	29.83	23.88	26.02	18.60	30.21	42.93
Cost per short ton -							
Total, without land charge	$4.53	$3.78	$4.21	$3.33	$3.56	$3.34	$3.17
Land charge	.20	.28	.37	.48	.61	.46	.58
Total with land charge	4.73	4.06	4.58	3.81	4.17	3.80	3.75

Table 18. - Sugar cane - Puerto Rico: Tenure of cane farms of different-sized plantings

1929

Size of planting of sugar cane	Number of farms			Percent of total acreage in cane represented by specified group
	Owned	Rented	Total	
Less than 10 acres	4,217	502	4,719	8.2
10 to 19 acres	659	52	711	5.1
20 to 39 acres	456	41	497	7.4
40 to 59 acres	134	19	153	3.9
60 to 79 acres	89	17	106	3.9
80 to 99 acres	42	4	46	2.2
100 to 399 acres	174	22	196	18.6
400 and above	71	3	74	50.7
Total	5,842	660	6,502	100.0

Source: Bureau of the Census.

Table 19.- Sugar cane - Philippine Islands: Number of farms, acreage, and production covered by cost inquiry

Area	Number of farms	Acreage on farms covered: Plant cane	Ratoon cane	Total cane	Percent ratoon cane	Production of cane: Tons harvested: Total	Per acre 1/	Percent of total production of island
			1930-31					
Luzon	79	8,551	1,808	10,359	17.5	145,967		6.5
Nasugbu	20	1,047	-	1,047	-	13,825	14.30	
Calamba	19	1,115	153	1,268	12.1	25,703	20.21	
Pampanga	21	3,830	835	4,665	17.9	70,920	13.25	
Bamban-Tarlac	19	2,559	820	3,379	24.3	35,519	10.32	
Negros	74	8,563	8,414	16,977	49.6	343,975		7.2
East Negros	10	1,687	1,487	3,174	46.8	79,372	23.93	
North Negros	24	3,663	3,470	7,133	48.6	123,184	17.35	
West Negros	40	3,213	3,457	6,670	51.8	141,419	21.02	
Total	153	17,114	10,222	27,336	37.4	489,942		6.5
			1931-32					
Luzon	81	8,841	2,335	11,176	20.9	223,020		7.0
Nasugbu	21	1,462	267	1,729	15.4	32,621	18.72	
Calamba	20	1,231	186	1,417	13.1	32,267	24.22	
Pampanga	21	4,075	971	5,046	19.2	104,041	20.26	
Bamban-Tarlac	19	2,073	911	2,984	30.5	54,091	17.54	
Negros	107	12,306	12,382	24,688	50.2	653,424		11.9
East Negros	10	1,959	1,529	3,488	43.8	114,355	32.12	
North Negros	28	4,478	3,900	8,378	46.6	225,743	26.04	
West Negros	69	5,869	6,953	12,822	54.2	313,326	23.87	
Total	188	21,147	14,717	35,864	41.0	876,444		9.4

1/ Simple average of the individual farm yields.

Table 20. - Sugar cane - Philippine Islands: Cost of production for each area covered by the Commission's inquiry

Cost item	Luzon				Negros		
	Nasugbu	Calamba	Pampanga	Bamban-Tarlac	East Negros	North Negros	West Negros
	1930-31						
Cost per acre							
Development	$19.92	$20.11	$17.27	$12.76	$12.08	$11.52	$9.12
Cultivation	7.17	7.96	7.99	10.48	16.58	11.44	12.34
Harvesting	6.76	14.92	9.50	7.48	11.50	12.28	14.62
Supervision	3.16	3.34	4.11	4.15	8.06	7.34	6.54
Irrigation	-	-	-	-	1.46	-	-
Taxes	.48	.62	.75	.74	1.12	.70	.90
Fertilizer	-	3.40	5.14	1.24	9.40	13.16	10.48
Miscellaneous	.51	1.16	1.16	.46	3.25	2.18	2.32
Total	38.90	51.51	45.92	37.31	63.45	58.62	56.32
Land charge (Imputed interest at 6 percent)	3.48	5.57	4.86	5.18	11.45	5.20	6.37
Total, with land charge	41.48	57.08	50.78	42.49	74.90	63.82	62.69
Yield per acre (short tons)	14.30	20.21	13.25	10.32	23.93	17.35	21.02
Cost per short ton -							
Without land charge	$2.66	$2.55	$3.47	$3.62	$2.65	$3.38	$2.68
With land charge	2.90	2.82	3.83	4.12	3.13	3.68	2.98
	1931-32						
Cost per acre							
Development	$20.98	$20.48	$16.33	$12.66	$11.50	$13.91	$9.40
Cultivation	7.50	8.04	8.44	10.77	17.18	13.46	12.92
Harvesting	8.48	17.32	13.80	12.16	14.54	16.50	15.74
Supervision	3.00	3.34	3.92	4.15	8.28	8.71	7.17
Irrigation	-	-	-	-	1.52	-	-
Taxes	.49	.62	.76	.74	1.20	.68	.91
Fertilizer	2.44	2.52	3.99	1.70	8.14	11.11	9.35
Miscellaneous	.84	1.39	1.04	.50	3.22	3.50	3.08
Total	43.73	53.71	48.28	42.68	65.58	67.87	58.57
Land charge (Imputed interest at 6 percent)	3.49	5.62	4.86	5.18	12.18	5.13	6.91
Total, with land charge	47.22	59.33	53.14	47.86	77.76	73.00	65.48
Yield per acre (short tons)	18.72	24.22	20.26	17.54	32.12	26.04	23.87
Cost per short ton -							
Without land charge	$2.33	$2.22	$2.38	$2.44	$2.04	$2.60	$2.45
With land charge	2.52	2.45	2.62	2.73	2.42	2.80	2.74

Table 21. - Sugar cane - Philippine Islands: Percentage of area in leading varieties on the Islands of Negros and Luzon

Variety	Negros				Luzon			
	1929	1930	1931	1932	1929	1930	1931	1932
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Native varieties	75.6	62.1	43.6	28.0	95.5	91.4	80.8	57.3
Badila	20.2	27.9	32.6	34.0	1.6	3.4	4.7	7.1
P.O.J. 2878	.4	2.7	13.2	26.1	-	.3	7.6	23.0
P.O.J. 2883	-	-	.4	1.2	-	-	.1	.1
D.I. 52	.6	1.6	3.2	4.3	-	.1	.2	.4
N.G. 24-A	.8	1.8	2.8	2.4	.1	.4	.9	1.5
Miscellaneous	2.4	3.9	4.2	4.0	2.8	4.4	5.7	10.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Philippine Sugar Association.

Table 22. - Sugar cane - Philippine Islands: Yields per acre, by varieties, on the Island of Negros as shown by experiments in 1930-31 and 1931-32 1/

Variety	Yield per acre		Number of experiments
	Pounds of sugar	Ratio of imported varieties to native variety	
		Percent	
Native variety	5,897	100	32
Badila	6,833	116	36
P.O.J. 2878	8,528	145	37
P.O.J. 2883	8,059	137	8
D.I. 52	6,473	110	32
N.G. 24-A	6,452	109	29

Source: Annual Report of the Philippine Sugar Association, 1931.

1/ The results of experiments for the Island of Luzon indicate similarly significant variations in yield per acre between native improved varieties.

Table 23. - Sugar cane - Cuba: Scope of the investigation of costs of cane grown by colonos or farmers

1930-31

Province	Field of investigation: Number of areas	Field of investigation: Number of farms	Area in cane operated by colonos: Total in Cuba	Area in cane operated by colonos: On farms studied	Area in cane operated by colonos: Percent of total on farms studied	Yield per acre harvested: Official Cuban	Yield per acre harvested: On farms studied 1/
			Acres	Acres		Tons	Tons
Pinar del Rio	1	23	58,467	4,733	8.1	18.37	18.50
Habana	2	47	131,867	9,000	6.8	16.73	15.77
Matanzas	2	48	283,300	12,033	4.2	15.65	15.57
Santa Clara	3	75	372,267	22,232	6.0	17.85	22.24
Camaguey	4	101	598,467	50,300	8.4	20.47	23.75
Oriente	3	76	568,667	32,332	5.7	16.47	15.50
Total	15	370	2,013,035	130,630	6.4	17.20	17.34

1/ Simple average of individual farm yields.

	Lentes	Francisco	Chaparra	San German	Soledad
Cultivat	.13	$7.51	$5.78	$5.50	$3.38
Harvestir	.34	12.08	10.20	10.13	9.11
Supervis	3.57	3.40	3.19	.99	3.01
Taxes ---	.27	.33	.27	.13	.40
Developm	6.17	3.00	2.80	3.59	3.54
Miscellar	.94	1.20	.76	.88	1.22
Tota	.42	27.52	23.00	21.22	20.66
Land cha					
investm	.16	2.70	2.70	1.47	1.80
Tota	.58	30.22	25.70	22.69	22.46
Yield pe	.81	19.91	14.16	14.19	15.28
(short					
Cultivat	.08	$2.54	$4.97	$2.44	$1.78
Harvestir	.12	6.53	9.93	8.24	4.99
Supervis	.63	2.16	2.86	.57	1.36
Taxes ---	.27	.33	.27	.13	.40
Developm	.17	3.00	2.80	3.59	3.54
Miscellar	.54	.64	.33	.63	.81
Tota	.81	15.20	21.16	15.63	12.88
Land cha					
investm	.16	2.70	2.70	1.47	1.80
Tota	.97	17.90	23.86	17.10	14.68
Yield pe	.92	17.15	19.10	16.12	11.32
(short					

1/ The

2/ The

3/ Sim

Table 24. - Sugar cane - Cuba: Cost of production, per acre, on farms of colonos, by areas
(based on total quantity grown, including unharvested cane)

Item	San Cristobal and Mercedita	Hershey	Gomez-Mena	Tinguaro	Cuba	Hormiguero	Resulta	Tuinicu	Cunagua	Stewart	Vertientes	Francisco	Chaparra	San German	Soledad
							1930-31								
Cultivation	$6.14	$9.34	$5.55	$4.85	$4.29	$11.12	$5.72	$7.99	$7.55	$6.57	$7.13	$7.51	$5.78	$5.50	$3.38
Harvesting	10.56	7.30	8.08	8.22	6.65	10.95	9.70	12.34	13.23	14.85	11.34	12.08	10.20	10.13	9.11
Supervision	.74	.54	3.93	3.63	3.64	.42	4.29	4.00	1.84	3.09	3.57	3.40	3.19	.99	3.01
Taxes	.21	.39	.25	.35	.27	.29	.27	.32	.27	.27	.27	.33	.27	.13	.40
Development	4.18	5.57	11.15	4.40	5.40	4.64	7.24	3.90	2.75	4.63	5.17	3.00	2.80	3.59	3.54
Miscellaneous	1/ 1.55	1.58	.35	.90	.41	2.20	1.24	1.21	.25	2/3.36	1.94	1.20	.76	.88	1.22
Total without land charge	23.38	24.76	29.31	22.35	20.66	29.62	28.46	29.76	25.89	32.77	29.42	27.52	23.00	21.22	20.66
Land charge (imputed interest on investment at 6 percent	1.95	3.60	2.70	2.09	2.70	3.60	2.16	3.60	2.16	1.80	2.16	2.70	2.70	1.47	1.80
Total cost with land charge	25.33	28.36	32.01	24.44	23.36	33.22	30.62	33.36	28.05	34.57	31.58	30.22	25.70	22.69	22.46
Yield per acre (short tons - 2,000 lbs.) 3/	16.25	14.54	16.82	14.28	14.12	20.16	18.65	19.31	21.06	23.50	21.81	19.91	14.16	14.19	15.28
							1931-32								
Cultivation	$4.14	$8.49	$4.00	$3.67	$2.18	$3.95	$3.32	$5.96	$5.38	$2.77	$2.08	$2.54	$4.97	$2.44	$1.78
Harvesting	7.84	7.68	6.42	7.68	5.35	7.74	8.78	8.06	13.29	9.16	9.12	6.53	9.93	8.24	4.99
Supervision	.70	.66	2.62	2.86	2.86	.36	3.31	3.13	1.73	2.45	2.63	2.16	2.86	.57	1.36
Taxes	.20	.42	.25	.35	.27	.29	.27	.32	.27	.27	.27	.33	.27	.13	.40
Development	4.19	5.57	11.16	4.40	5.40	4.65	7.24	3.90	2.75	4.63	5.17	3.00	2.80	3.59	3.54
Miscellaneous	.92	1.52	.28	.55	.17	1.47	.94	1.23	.20	.07	.54	.64	.33	.63	.81
Total without land charge	17.99	24.34	24.73	19.51	16.23	18.46	23.86	22.60	23.62	19.35	19.81	15.20	21.16	15.63	12.88
Land charge (imputed interest on investment at 6 percent)	1.95	3.60	2.70	2.09	2.70	3.60	2.16	3.60	2.16	1.80	2.16	2.70	2.70	1.47	1.80
Total cost with land charge	19.94	27.94	27.43	21.60	18.93	22.06	26.02	26.20	25.78	21.15	21.97	17.90	23.86	17.10	14.68
Yield per acre (short tons - 2,000 lbs.) 3/	17.65	14.75	16.06	17.55	15.15	19.34	20.32	21.59	27.22	19.75	21.92	17.15	19.10	16.12	11.32

1/ The miscellaneous item of $1.55 includes $0.43 for fertilizer and $0.73 for other.
2/ The miscellaneous item of $3.36 includes $2.87 for fertilizer and $0.28 for other.
3/ Simple average of individual farm yields.